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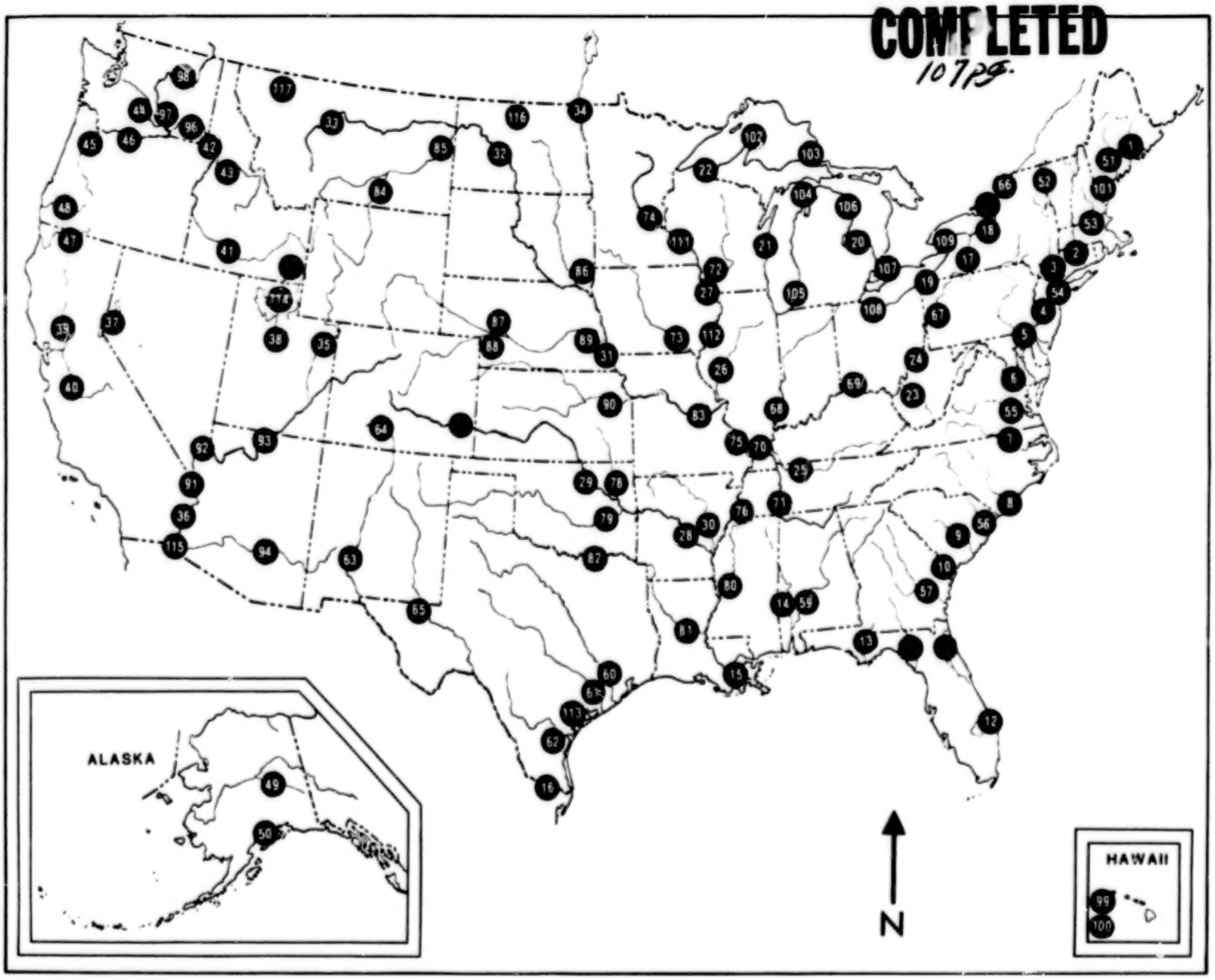

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NATIONAL PESTICIDE MONITORING PROGRAM: ORGANOCHLORINE RESIDUES IN FRESHWATER FISH, 1976–79

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National Pesticide Monitoring Program: Organochlorine Residues in Freshwater Fish, 1976–79

by

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Abstract

The U.S. Fish and Wildlife Service measured organochlorine residues in 620 whole fish samples collected from 109 stations nationwide in 1976–79, as part of the National Pesticide Monitoring Program. During this period, residues of DDT and its homologs averaged significantly lower than they did before 1975. The most persistent homolog, *p,p'*-DDE, made up about 70% of total DDT residues in 1974–79. Contamination attributable to DDT manufacturing facilities was evident at sites in Alabama and Arkansas, and high residues at a site in the Southwest may reflect continuing use of DDT in Mexico. Dieldrin residues declined somewhat nationally, but remained high in Hawaii and in the Great Lakes. Residues of polychlorinated biphenyls (PCB's) were more widely distributed than reported previously, but appeared to be declining in some areas of high concentration, and the less-chlorinated PCB's (resembling Aroclor 1242) were disappearing. Toxaphene residues were virtually ubiquitous; concentrations in fish from the Great Lakes exceeded those in fish from most of the rest of the Nation, including locations within the cotton-growing regions. Chlordane residues were also widespread; residues were highest in Hawaii and the Midwest. No general trends were evident for residues of other organochlorines (e.g., BHC isomers, heptachlor epoxide, dacthal, endrin). Water Quality Criteria established by the National Academy of Sciences for the protection of piscivorous fishes and wildlife were exceeded (as they were in 1974) in more than half of the samples collected at about 75% of the stations.

Effective management of toxic substances in the environment requires a commitment to long-term monitoring. In recognition of this responsibility, the U.S. Fish and Wildlife Service (FWS) has participated in the National Pesticide Monitoring Program (NPMP) since 1967 by periodically analyzing residues of selected organochlorine contaminants and toxic trace metals in samples of fish and wildlife collected from a national network of stations. The results of analyses of freshwater fish for organochlorines from 1967 through 1974 and for trace metals from 1967 through 1977 have already been reported (Henderson et al. 1969, 1971, 1972; May and McKinney 1981; Schmitt et al. 1981; Walsh et al. 1977). In this report we present the results of the organochlorine analyses for freshwater fish collected from 1976 through 1979, and discuss residue trends from 1974 to 1979.

Methods of Study

Fish were collected from 112 stations located throughout the United States (Fig. 1; Appendix A). Samples were collected at about half the stations in even-numbered years and at the other half in odd-numbered years. Methods of collection, shipment, archiving, and preparation were described by Schmitt et al. (1981). Collaborators were asked to collect three samples at each station — two of a representative bottom-feeding species, and one of a representative predator species. Each sample was composed of three to five whole, adult fish. Fishes collected in 1976–79, or mentioned in the text, are listed in Table 1.

In the analysis of all samples at the Columbia National Fisheries Research Laboratory (CNFRL), we used electron-capture gas chromatography to measure residues of *p,p'*-DDT and its homologs, polychlorinated biphenyls (PCB's, as Aroclors 1242, 1248, 1254, and 1260), toxaphene, aldrin, dieldrin, alpha benzene hexachloride (α-BHC), gamma benzene hexachloride (γ-BHC, lindane), hexachlorobenzene (HCB), endrin, heptachlor, heptachlor epoxide, *cis*- and *trans*-chlordane, and *cis*- and *trans*-nonachlor. Samples were also regularly screened for residues of *o,p'*-DDT homologs and mirex. Beginning with 1978 samples, we also measured residues of dacthal and oxychlordane. Details of the analytical procedures follow.

Table 1. *Common and scientific names of fishes collected for residue analysis in the National Pesticide Monitoring Program, 1976–79*[a].

Family and scientific name	Common name	Family and scientific name	Common name
Lepisosteidae		*Minytrema melanops*	spotted sucker
Lepisosteus osseus	longnose gar	*Moxostoma* sp.	redhorse
L. spatula	alligator gar	Ictaluridae	
Amiidae		*Ictalurus catus*	white catfish
Amia calva	bowfin	*I. furcatus*	blue catfish
Clupeidae		*I. melas*	black bullhead
Alosa chrysochloris	skipjack herring	*I. nebulosus*	brown bullhead
Dorosoma cepedianum	gizzard shad	*I. punctatus*	channel catfish
Hiodontidae		Clariidae	
Hiodon alosoides	goldeye	*Clarias fuscus*	Chinese catfish
Salmonidae		Gadidae	
Coregonus clupeaformis	lake whitefish	*Lota lota*	burbot
C. hoyi	bloater	Poeciliidae	
Prosopium cylindraceum	round whitefish	*Poecilia vittata*	Cuban limia
Salmo gairdneri	rainbow trout	Percichthyidae	
S. trutta	brown trout	*Morone americana*	white perch
Salvelinus malma	Dolly Varden	*M. chrysops*	white bass
S. namaycush	lake trout	*M. saxatilis*	striped bass
Thymallus arcticus	Arctic grayling	Centrarchidae	
Esocidae		*Ambloplites rupestris*	rock bass
Esox lucius	northern pike	*Lepomis cyanellus*	green sunfish
E. niger	chain pickerel	*L. gibbosus*	pumpkinseed
Cyprinidae		*L. gulosus*	warmouth
Acrocheilus alutaceus	chiselmouth	*L. macrochirus*	bluegill
Carassius auratus	goldfish	*L. microlophus*	redear sunfish
Clinostomus elongatus	redside dace	*Micropterus dolomieui*	smallmouth bass
Cyprinus carpio	common carp	*M. punctatus*	spotted bass
Orthodon microlepidotus	Sacramento blackfish	*M. salmoides*	largemouth bass
Ptyocheilus oregonensis	northern squawfish	*Pomoxis annularis*	white crappie
Catostomidae		*P. nigromaculatus*	black crappie
Carpiodes carpio	river carpsucker	Percidae	
Catostomus catostomus	longnose sucker	*Perca flavescens*	yellow perch
C. columbianus	bridgelip sucker	*Stizostedion canadense*	sauger
C. commersoni	white sucker	*S. vitreum vitreum*	walleye
C. latipinnis	flannelmouth sucker	Sciaenidae	
C. macrocheilus	largescale sucker	*Aplodinotus grunniens*	freshwater drum
C. snyderi	Klamath largescale sucker	Cichlidae	
C. tahoensis	Tahoe sucker	*Tilapia mossambica*	Mozambique tilapia
Ictiobus bubalus	smallmouth buffalo	Mugilidae	
I. cyprinellus	bigmouth buffalo	*Mugil cephalus*	striped mullet

[a] From American Fisheries Society, Committee on Names of Fishes (1980), except for *Poecilia vittata* and *Clarias fuscus*.

Laboratory Analyses

Sample Preparation

Each composite sample was prepared for extraction according to the following procedures: Individual frozen fish were cut into 2.5-cm cubes with a band saw (Hobart, Model 5822) and then ground twice in a meat grinder (Hobart, Model 4822) until the sample appeared to be homogeneous. The ground tissue from all fish constituting a sample was collected in a polyethylene bag and mixed by hand until homogeneous. A 400-g portion was then placed in a 450-mL bottle and refrozen. For the 1978–79 samples, an additional 10-g portion was placed in a 114-mL jar and refrozen as a quality assurance measure.

Extraction

For the 1976 and 1977 samples, each 400-g sample was thawed and mixed and a 20-g subsample was weighed into a 225-mL glass jar. Powdered anhydrous Na_2SO_4 (80 g, previously heated to 500° C) was mixed with the sample. The dried mixture was ground to a fine powder with a stainless steel rod and packed into a chromatographic column, 20 mm in inside diameter (i.d.), fitted with a 200-mL reservoir open on top. For the 1978–79 analyses each 10-g sample aliquot was thawed and mixed with 40 g of Na_2SO_4 and packed into a similar 20-mm chromatographic column fitted with a 200-mL reservoir on top, but with a removable Teflon stopcock at the bottom. The 1976 samples were extracted with 200 mL of 5% diethyl ether in petroleum ether and the 1977–79 samples with 200 mL of dichloromethane. The solvent was allowed to percolate through the sample at 3–5 mL/min; the flow rate was adjusted by tamping the mixture with an aluminum rod (15 mm in diameter) in 1976–77, or by adjusting the stopcock opening in 1978–79. The extracts were collected in a 250-mL round-bottomed flask fitted with a 10-mL reservoir at the bottom (May and Stalling 1979) and evaporated to 5 mL by rotoevaporation.

Lipid and Moisture Determination

The concentrated extracts were diluted to 10 mL with gel permeation chromatography (GPC) solvent, and 1 mL was transferred to a pre-weighed 7.8-g (2-dram) vial. The solvent in this aliquot was evaporated to dryness overnight before the percent lipid was determined gravimetrically. The rest of the diluted extracts were cleaned up by GPC.

Percent moisture content in separate aliquots of each homogenized whole-body composite was determined with a C. W. Brabender Moisture and Volatiles Tester. Moisture determinations were initiated at the start of the 1977 sample year.

Gel Permeation Chromatography

Automated GPC was used to separate organochlorines from fish oils in the extracts. In 1976 a 35-g bed of SX-3 Biobeads gel resin (Bio Rad, Richmond, California) was used with a solvent system composed of 25% toluene in ethyl acetate in a 40-cm × 2.5-cm (i.d.) glass column with two adjustable end plungers (Glenco Scientific, Inc., Houston, Texas). The column was placed on an automated low-pressure GPC Autoprep 1001 chromatography unit (ABC Labs, Inc., Columbia, Missouri) capable of handling up to 23 samples. The sample extracts were diluted 1:1 with GPC solvent, and 5 mL (but not more than 1 g lipid) were placed on the GPC column. The first 80 mL were directed to a waste container, and the next 80 mL were collected in a 125-mL flask fitted with a calibrated 5-mL reservoir on the bottom (May and Stalling 1979).

The GPC procedure was modified, starting in 1977. A 60-g bed of SX-3 Biobeads in a 60-cm × 2.5-cm (i.d.) glass column was used with a solvent system of 1:1 dichloromethane in cyclohexane. The first 155 mL were discarded; the second 100 mL were collected in a 250-mL double reservoir flask (May and Stalling 1979). The GPC eluates were rotoevaporated and prepared for Florisil chromatography.

Florisil Adsorption Chromatography

We used Florisil adsorption chromatography to further clean up fatty extracts and to initially fractionate organochlorine compounds before determining multiple residues by gas–liquid chromatography (GLC). Most chlorinated pesticides and PCB's were eluted from a Florisil column with a 6% (by volume) eluent of diethyl ether in petroleum ether, followed by elution of more polar compounds with ether mixtures ranging from 20 to 40%.

In 1976 the GPC concentrate was diluted to 5 mL with petroleum ether before it was placed on a 5-g Florisil column (80/100 mesh, Fisher Scientific). Florisil columns were prepared by placing a 1-cm layer of anhydrous Na_2SO_4 on a pledget of glass wool in a chromatography column (30 cm × 1 cm i.d.) fitted with a 75-mL reservoir open on top (Ace Glass, Vineland, New Jersey). We then added 5 g Florisil (activated at 130° C) to the column and topped it with another 1-cm layer of Na_2SO_4. Each prepared column was next washed with 20 mL of petroleum ether. When the top of the wash solvent reached the top of the upper Na_2SO_4 layer, half of the GPC concentrate was transferred to the column and allowed to drain onto the bed of Florisil. The column walls were washed with 5 mL of the first elution solvent (40 mL of 6% diethyl ether in petroleum ether). When the wash solvent reached the top of the Florisil, the remaining elution solvent was added, and the eluate was collected for further separation of pesticides from PCB's. The second elution solvent (40 mL of 20% diethyl ether in petroleum ether) was then added; this eluate was collected for GLC analysis of strongly polar pesticides (e.g., dieldrin, endrin, and dacthal).

Silica Gel Adsorption Chromatography

We separated PCB's from most of the pesticides with silica gel chromatographic techniques modified from Kadoum (1967). Silica gel columns were prepared by lightly plugging a chromatography column (30 cm × 1 cm i.d.) with glass wool, adding a 1-cm layer of Na_2SO_4 and 5 g of silica gel (activated at 130° C), and topping with an additional 1-cm layer of Na_2SO_4. The prepared columns were prewashed with 20 mL hexane. When the hexane wash reached the top of the Na_2SO_4, the sample was added to the column and rinsed with 5 mL of the first eluant and allowed to sink into the bed. The rest of the first eluant was added and allowed to drip into a 125-mL double reservoir flask (May and Stalling 1979). The first eluate (PCB fraction) contained the PCB's, HCB, heptachlor, aldrin, mirex, and most of the *p,p'*-DDE. The second eluate (pesticide fraction) contained the rest of the DDE, the BHC isomers, toxaphene, DDT and its homologs, chlordane (including the nonachlor isomers), oxychlordane, heptachlor epoxide, and methoxychlor.

In 1976–77, Silicar GC-7 silica gel (Mallinckrodt, 70/230 mesh) was used. The PCB fraction was eluted with 0.5% benzene in hexane, and the pesticide fraction with 15 mL of 4% ethyl acetate in benzene. In 1978–79 Silica Gel 60 (E. Merck, 70/230 mesh) was used and the pesticide fraction eluant was changed to 25 mL of 25% diethyl ether in hexane. Total volume of the PCB eluant used depended on the activity of the silica gel and was calculated independently for each batch. In general, 35–45 mL of 0.5% benzene in hexane were used to separate the PCB's from the pesticide fraction. Both eluate fractions were rotoevaporated to reduce the volume of solvent, and the resulting concentrates were diluted to 5 mL with isooctane prior to GLC.

Gas–Liquid Chromatography

In 1976 all samples were analyzed with a Tracor 222 gas chromatograph equipped with an electron capture detector. The samples were injected into a glass column (1.8 m × 2 mm i.d.) containing 4% SE-30 + 6% QF-1 coated on 80/100 mesh Gas Chrom-Q support. Operating temperatures were as follows: column, 200° C for dieldrin, endrin, and dacthal, and 180° C for the PCB and pesticide fractions; injector, 250° C; and detector, 300° C. The carrier gas was argon/methane (95:5) flowing at 30 cc/min. We determined residues by the external standard calculation method, using peak height measurements.

All 1977–79 samples were analyzed with a Varian 3700 gas chromatograph equipped with an electron-capture detector. The glass analytical column (1.8 m × 2 mm i.d.) contained 1.5% SP-2250 + 1.95% SP-2401 on 100/120 Supelcoport. We used the following operating temperatures: column, 200° C for the dieldrin-containing and PCB fractions and 180° C for the pesticide fraction; injector, 250° C; and detector, 350° C. The carrier gas was argon/methane flowing at 20 cc/min. We quantitated residues by the external standard method, using peak area calculations. In 1977, peak areas were collected on a Varian CDS-111 digital integrator. In 1977–79 a Perkin-Elmer Sigma 10 Laboratory Data Station was used for data collection.

Confirmatory analyses were performed with a 3% OV-1 on 80/100 mesh Chromsorb-W HP column with the same dimensions as those indicated above. Samples that contained *o, p'*-DDE were analyzed on this column to differentiate interference from chlordane. Further confirmations or identifications of unknown compounds were performed on this column by comparing results with the U.S. Food and Drug Administration (FDA) chromatography data base (McMahon 1968).

Quality Assurance

The accuracy and precision of residue determinations depends on four factors: (a) efficient extraction and fractionation; (b) analytical methods (e.g., solvents and columns with uniform behavior and low background); (c) proper instrument maintenance and calibration; and (d) accurate standard solutions.

To evaluate these factors, we made systematic recovery studies on two types of spiked reference materials: (a) "hot spikes" of ^{14}C-radiolabeled dieldrin and *p,p'*-DDE were used to examine recovery and separation efficiencies through the extraction and fractionation steps; and (b) "cold spikes," fish tissue blanks to which a representative pesticide profile had been added, were used to evaluate residue recoveries at levels approximating realistic tissue concentrations. Some samples were replicated to evaluate precision, and 10–15% of the samples were analyzed by a second laboratory to corroborate our findings. Residues in selected samples were confirmed by using gas chromatography–mass spectrometry as described by Ribick et al. (1981, 1982). With reference to factors (c) and (d), we closely followed FDA criteria (McMahon 1968) in instrument calibration and maintenance, and in the preparation of standard solutions.

Recovery efficiency for *p,p'*-DDT, *p,p'*-DDD, *p,p'*-DDE, Aroclor 1254, dieldrin, *cis*-chlordane, and *trans*-chlordane exceeded 85% throughout the study period, based on recovery of ^{14}C-labeled DDE and dieldrin and non-radiolabeled chemicals in spiked samples. The level of detection was 0.1 μg/g wet weight for PCB's and toxaphene and 0.01 μg/g for all other residues. Concentrations were not corrected for percent recovery.

Cross-check Analyses

The 1976–77 cross-check analyses were performed at a commercial laboratory, here termed "Lab A," where 25-g subsamples were mixed with 100 g of Na_2SO_4 and blended with 100 mL of 6% diethyl ether in petroleum ether. The mixture was filtered through a Buchner vacuum funnel. The filtrate was retained and the filter cake placed in a 43- × 123-mm extraction thimble. The thimble was then Soxhlet-extracted overnight at four extraction cycles per hour with 300 mL of 6% diethyl ether in petroleum ether.

The extract and filtrate were combined and concentrated by rotoevaporation and diluted to 25 mL with 15% dichloromethane in cyclohexane. A 5-mL aliquot was loaded into an Autoprep 1001 GPC equipped with a 50-g Biobeads SX-3 column in which 15% dichloromethane in cyclohexane was used as the solvent.

At Lab A the cleaned-up extracts were concentrated just to dryness by rotoevaporation and diluted to 15 mL with petroleum ether; 5 mL were then transferred to a 20-g Florisil column. A total of 100 mL of 20% dichloromethane in petroleum ether (eluant A) were used to elute PCB's, DDT homologs, chlordanes, BHC's, aldrin, HCB, heptachlor, and toxaphene; and 180 mL of 50% dichloromethane in petroleum ether (eluant B) were used to elute heptachlor epoxide, dieldrin, and endrin. The Florisil eluates were concentrated just to dryness and adjusted to a volume of 5 mL with petroleum ether. A 1-mL aliquot of the A fraction was placed on a 5-g silica gel column. The PCB's, HCB, aldrin, heptachlor, and some *p,p'*-DDE were eluted with 25 mL of 0.5% benzene in petroleum ether. The rest of the compounds were eluted with 30 mL of 4% ethyl acetate in benzene. These eluates were concentrated and made ready for GLC analysis along with Florisil eluate B. Aliquots of 1 µL were injected into a Packard 805 gas chromatograph equipped with electron capture detectors. The glass column (1.8 m × 4 mm i.d.) was packed with 1.5% OV-17 + 2.0% OV-210 on 100/120 Gas Chrom-Q. Temperatures were as follows: column, 200° C; injector, 225° C; and detector, 300° C.

Fractions giving chlordane response were analyzed on a column (1.8 m × 4 mm i.d.) containing 3% SE-30 on 100/120 Gas Chrom-Q at 180° C to resolve *cis*- and *trans*-chlordane from *trans*-nonachlor.

The 1978–79 cross-check analyses were done at the Great Lakes Fishery Laboratory, FWS, Ann Arbor, Michigan. The analytical procedures used there were described by Snyder and Reinert (1971) and Hesselberg and Nicholson (1981).

Data Handling and Statistical Analyses

Improved analytical methods freed the residue values determined for the collection years 1976 through 1979 from the intercompound interferences reported for earlier NPMP organochlorine analyses (Schmitt et al. 1981). The present data were therefore amenable to more rigorous statistical testing than were those for previous years. We analyzed transformed values of percent lipid, wet-weight residues, and lipid-weight residues by analysis of variance (ANOVA), using the mixed nested-crossed model

$$Y_{ijkl} = \mu + L_i + P_j + LP_{ij} + S_k(LP) + \epsilon_{ijkl}$$

where Y_{ijkl} = transformed value from location i, collection period j, species k, and sample l;μ = the grand mean; L_i = random location effect; P_j = fixed collection-period effect; LP_{ij} = location–collection period interaction; $S_k(LP)$ = random effect of species within each location and collection period; and ϵ_{ijkl} = error (among samples of the same species). The rationale for using this model to test for collection-period differences and the details of the overall testing procedures were described by Schmitt (1981).

We used the Statistical Analysis System (SAS Institute, Inc. 1979), available through the University of Missouri-Columbia computer system (Amdahl 470 V7), for all data handling and statistical analyses. For trend analyses, the following descriptive statistics were computed for each compound, by collection period: mean (after appropriate transformation), minimum and maximum concentration, and percentage of stations at which each compound was detected. Least-squares means (SAS Institute, Inc. 1979), which are adjusted for the number of observations per cell, were examined throughout. Percent lipid values were normalized by using the angular transformation (Schmitt 1981). Lipid-weight residue concentrations were computed, and both lipid-weight and wet-weight concentrations were normalized by applying the ($\log_{10}$ [residue concentration + 1.0]) transformation before computation of means and further statistical analyses. Schmitt et al. (1981) discussed the applicability of these procedures to residue-monitoring data. In addition to descriptive statistics, we computed annual matrices of product-moment correlation coefficients to illustrate trends in the co-occurrence of compounds.

To examine more thoroughly for temporal trends, we reanalyzed some NPMP results from 1974 (Schmitt et al. 1981). After recomputing the ANOVA for data from 1974 through 1979, we analyzed for differences among collection periods, using the sum-of-squares simultaneous test procedure to compare means (Sokal and Rohlf 1969). We then used analysis of covariance (Snedecor and Cochran 1967) to examine the significance and direction of the observed changes in lipid-weight residues from 1974 through 1979. The level of significance used in all statistical tests was $P \leq 0.05$.

We used several statistical techniques to compare our results with corresponding values reported by the cross-check laboratories. Summary statistics were computed for each laboratory's results after the data were transformed (as described), and percent occurrence was compared. For each compound, the product-moment correlation coefficient (r) between corresponding values was computed to give a general indication of agreement. We also used linear regression (Snedecor and Cochran 1967) to test for overall agreement, computing slope (b) and intercept (a) values for the relationship $y = a + bx$, where y = cross-check value and x = original CNFRL value. We then tested the coefficients to determine whether the slopes (b) differed significantly from 1.0 or the intercepts (a) differed from 0.0 (perfect agreement between laboratories would yield relations in which $a = 0.0$, $b = 1.0$, and $r = 1.0$). Overall differences between laboratories were tested by using two-way ANOVA for paired comparisons (Sokal and Rohlf 1969).

Results and Discussion

Characteristics and Limitations of the Data

Among the 112 active NPMP stations (Fig. 1), collections were made at 106 (94%) in 1976–77 and at 108 (96%) in 1978–79; 102 stations (91%) yielded data in both 1976–77 and 1978–79 (Table 2). This 102-station subset of data from both periods contained 591 samples (95% of the 1976–79 data). There were 78 stations (out of a possible 113) with complete data from 1974 through 1979 that could be analyzed for temporal trends; this subset contained 753 observations (Table 2).

As reported previously by Schmitt et al. (1981), the species collected at the NPMP stations have varied from year to year. A total of 58 taxa were sent to CNFRL for residue determinations in 1976–79 and 71 taxa in 1970–74. Overall, the five most frequently collected species changed little from

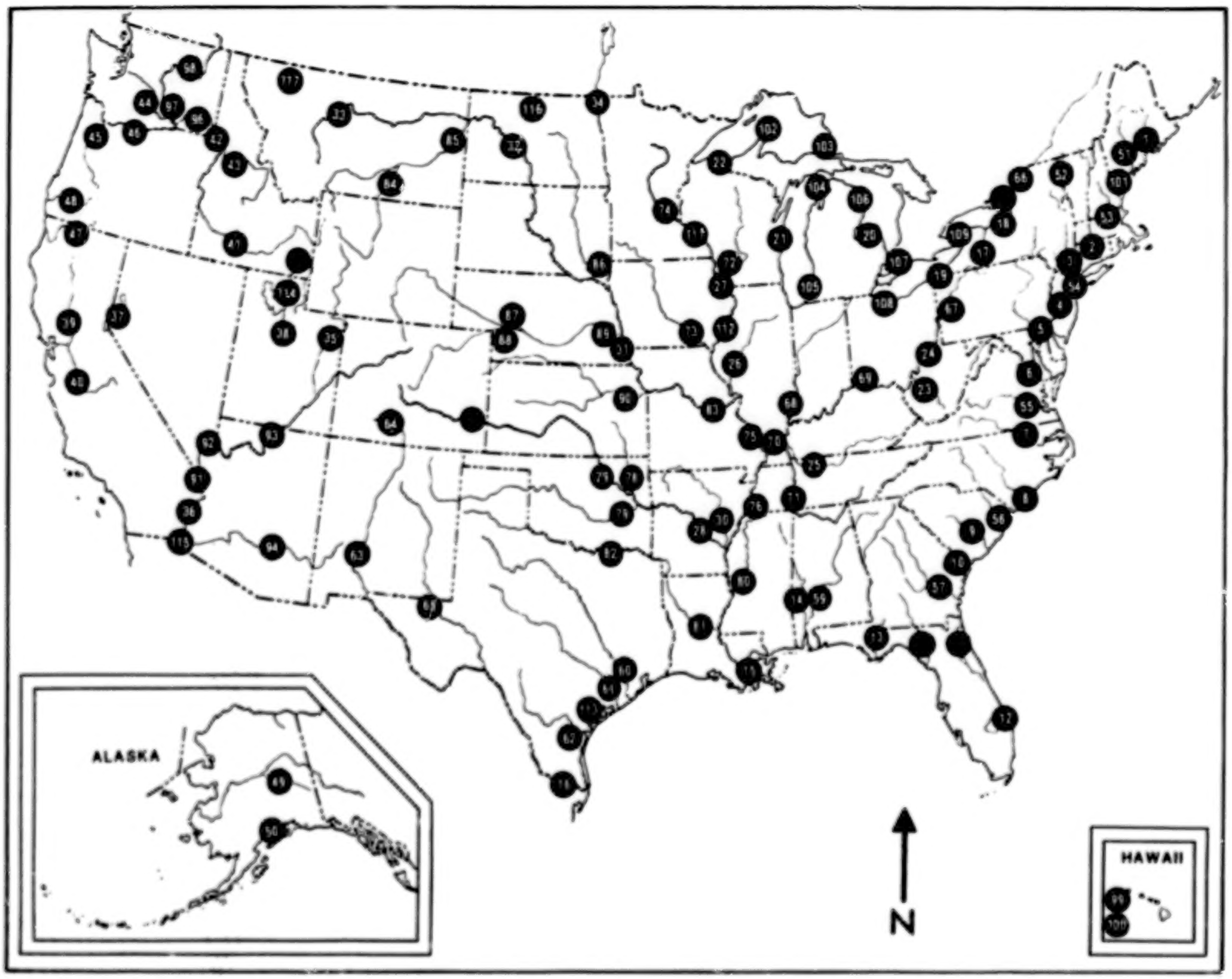


Fig. 1. National Pesticide Monitoring Program (NPMP) stations (numbered circles) where freshwater fish were collected for organochlorine residue analyses. (Unnumbered circles represent stations not sampled during 1976–79.)

those reported in the past: common carp represented 22% of the samples and were collected at 35% of the stations; channel catfish, 5% of the samples and 11% of the stations; largemouth bass, 7% and 19%; white sucker, 8% and 13%; and yellow perch, 3% and 8%. Collectively, these five species represented 45% of the 620 samples analyzed. The proportional representation of the five major species was lower than reported for 1970–74; consequently, the data set was even more heterogeneous than before, and additional species were numerous. Other frequently collected species for the period 1976–79 included smallmouth buffalo, largescale sucker, walleye, lake trout, bloater, and white catfish. When the data set was reduced to the 102 stations with continuous data from 1976 through 1979, there were 54 taxa; when it was trimmed further to 78 stations and the 1974 data were added, there were 52 taxa. The proportional representation of the five major species in the three data sets was nearly identical; collectively, they represented 45% of the total 1976–79 samples, 44% of the samples in the 102-station subset (1976–79), and 46% of the 78-station subset (1974–79). Conclusions regarding temporal trends that are drawn from all the data or from either subset should therefore not be overly biased by differences in the proportional species composition of the data sets.

Year-to-year continuity at the stations declined slightly compared with that reported for 1970–74 (Schmitt et al. 1981). At the 102 stations for which data are available for both 1976–77 and 1978–79, one species was common to both collections at 79 stations (78%); two or more identical species were collected in both periods at 44 stations (43%); and three identical species were taken in both collection periods at one station (No. 115). For the 78-station subset spanning three collection periods (1974, 1976–77, and 1978–79), continuity was poorer: At 46 stations (59%) one species was common to all three collection periods; at 16 stations (20%) there were two such species; and at no stations were three species common to all three collection

Table 2. *Occurrence of the five most frequently collected fish species, and of all species combined, in the NPMP data set, 1974–79.*

Species and collection period	Number of stations represented											
	All (113)				102[a]				78[b]			
	Samples		Stations		Samples		Stations		Samples		Stations	
	No.	%[c]	No.	%[d]	No.	%[c]	No.	%[d]	No.	%[c]	No.	%[d]
Common carp												
1974	59	17.6	42	48.3	–	–	–	–	57	19.1	41	52.6
1976–77	63	20.7	36	34.0	60	20.4	34	33.3	46	20.4	26	33.3
1978–79	74	23.5	39	36.1	71	23.9	37	36.3	55	24.1	28	35.9
1974–79	196	20.5	117	39.0	–	–	–	–	158	21.0	95	40.6
Channel catfish												
1974	37	11.0	32	36.8	–	–	–	–	35	11.7	30	38.5
1976–77	19	6.2	15	14.2	19	6.5	15	14.7	16	7.1	13	16.7
1978–79	12	3.8	8	7.4	10	3.4	7	6.9	8	3.5	5	6.4
1974–79	68	7.1	55	18.3	–	–	–	–	59	7.8	48	20.5
Largemouth bass												
1974	25	7.5	19	21.8	–	–	–	–	21	7.0	16	20.5
1976–77	20	6.6	20	18.9	20	6.8	20	19.6	15	6.6	15	19.2
1978–79	21	6.7	21	19.4	20	6.7	20	19.6	16	7.0	16	20.5
1974–79	66	6.9	60	19.9	–	–	–	–	52	6.9	47	20.1
White sucker												
1974	15	4.5	12	10.5	–	–	–	–	14	4.7	11	14.1
1976–77	24	7.9	13	12.3	22	7.5	12	11.8	16	7.1	9	11.5
1978–79	29	9.2	15	13.9	29	9.8	15	14.7	18	7.9	9	11.5
1974–79	68	7.1	40	13.3	–	–	–	–	48	6.4	29	12.4
Yellow perch												
1974	25	7.5	14	6.1	–	–	–	–	21	7.0	12	15.4
1976–77	7	2.3	6	5.7	6	2.0	5	4.9	6	2.7	5	6.4
1978–79	11	3.5	10	9.3	11	3.7	10	9.8	11	4.8	10	12.8
1974–79	43	4.5	30	10.0	–	–	–	–	38	5.0	27	11.5
Major species (5)												
1974	161	48.1	–	–	–	–	–	–	148	49.5	–	–
1976–77	133	43.6	–	–	127	43.2	–	–	99	43.8	–	–
1978–79	147	46.1	–	–	141	47.5	–	–	108	47.4	–	–
1974–79	441	46.2	–	–	–	–	–	–	355	47.1	–	–
All species[e]												
1974	335	35.1	87	77.0	–	–	–	–	299	89.3	78	90.0
1976–77	305	31.9	106	93.8	294	96.4	102	96.2	226	74.1	78	73.6
1978–79	315	33.0	108	95.6	297	94.3	102	92.3	228	72.4	78	72.2
1974–79	955	100.0	113	100.0	–	–	–	–	753	78.8	78	69.0

[a] Stations where at least one sample was taken in each collection period, 1976–79.

[b] Stations where at least one sample was taken in each collection period, 1974 and 1976–79 (no samples collected in 1975).

[c] Percentage of samples taken in each collection period or periods for indicated data set.

[d] Percentage of station-years in collection period or periods for indicated data set.

[e] For all-species summary, percentages are of total samples taken or of stations sampled in the indicated collection period.

periods. As reported previously (Schmitt et al. 1981), much geographic discontinuity stems from the lack of truly ubiquitous fish species that can be collected at all of the NPMP stations. Temporal discontinuity results from the limited time and resources available for making collections, and from the inherent variability of the large-river environment characteristic of most NPMP stations. Large rivers are notoriously difficult and expensive to sample, and typically display extreme temporal variability. The mixed-model ANOVA used to test time-period main effects was selected because it enables one to deal with such temporally variable species composition (Schmitt 1981).

Interlaboratory Cross-checks

Results of statistical analyses performed on the two sets of cross-check data are presented in Table 3. Results for individual samples are tabulated with corresponding monitoring data in Appendix A.

Compared with earlier years (Schmitt et al. 1981), interlaboratory agreement was generally good. Lab A significantly overestimated the lipid content relative to that estimated by CNFRL (Table 3). The fact that the paired-comparisons ANOVA and the intercept, but not the slope, were significant suggests a consistent additive (rather than multiplicative) disparity. Significant differences between our laboratory and Lab A in the results of one or more statistical tests were demonstrated for most of the compounds measured in 1976 and 1977. Agreement in all comparisons was evident only for γ-BHC, for which residues were at or near 0.0 µg/g in all samples (Table 3). Discrepancies were especially noticeable for multi-component residues, such as PCB's, toxaphene, and the chlordane–heptachlor complex, and for residues that co-elute with components of these mixtures (e.g., *p,p'*-DDT homologs).

Interlaboratory agreement for 1978–79 was better than that for 1976–77 (Table 3). The Great Lakes Fishery Laboratory cross-checked fewer compounds than did Lab A, but significant differences occurred for fewer compounds; agreement was close for lipid content and for residues of total DDT and total PCB. As was true for Lab A, however, agreement was generally poor for multi-component residues (e.g., PCB mixtures, toxaphene, and chlordane).

General Trends in Residue Concentrations

Mean, minimum, and maximum residue concentrations and percent occurrence of the compounds measured were determined for each collection period (Table 4). These statistics are based on all samples collected. We computed ANOVA for 1976–79 for 102 stations and for 1974–79 for 78 stations (Table 5). Means for each of these collection periods and the significance of differences among the means are presented in Table 6.

The general interpretation of ANOVA results for residue monitoring data was discussed by Schmitt et al. (1981). As these authors explained, the "species within" line of the ANOVA represents variation between species at different locations and time periods. Comparison of the "species within" source of variation, for corresponding wet-weight and lipid-weight residues allows one to determine whether adjusting for lipid content explains differences between species. A further indication of the variation due to lipid content can be found by examining r^2, which is the proportion of the variation in the residue levels explained by sources other than "within species" (error mean-square in Table 5); if accounting for variation attributable to percent lipid is important, then ANOVA in which lipid-weight residues are used should yield higher r^2 values than the same analyses in which wet-weight residues are used.

As Table 5 illustrates, our data generally refute the hypothesis that differences in organochlorine residues between species at a given site are related to their differing lipid levels. "Species within" F-values for lipid-weight residues, although generally lower than those for corresponding wet-weight analyses (Table 5), were nevertheless significant for all compounds except those where the data set was dominated by zero or very low values (Aroclor 1248, α-BHC, HCB, heptachlor, and [when 1974 data were included] endrin). The r^2 values showed little, if any, improvement for most compounds when lipid-weight rather than wet-weight residues were considered; in fact, r^2 decreased as often as it increased (Table 5). These results support two conclusions previously reported by Schmitt et al. (1981): (a) lipid content alone does not adequately explain differences in residue levels between species at a given location; and therefore (b) more than one species must be collected if mean residue levels at each location are to be accurately reflected by the monitoring effort.

Figure 2 is a matrix of inter-compound correlations for the years 1976–77 (below the principal diagonal) and 1978–79 (above the principal diagonal). Not surprisingly, weak correlations were present during both monitoring years between several compounds and percent lipid (positive correlations) and percent moisture (negative correlations). Also not surprising were the strong correlations among several compounds and their metabolites and among related components of multi-residue mixtures (DDT homologs, PCB's, and members of the chlordane–heptachlor complex). Residues of persistent compounds that were formerly used to protect the same crops (Eichers et al. 1978) also tended to be intercorrelated (e.g., toxaphene, endrin, dieldrin, and DDT, which were all used in cotton production; and the cyclodiene insecticides chlordane, aldrin [which is metabolized to dieldrin], and heptachlor, all of which were used to combat corn rootworm [*Diabrotica undecimpunctata*] and a variety of cotton pests). The weak correlations between several chlordane components and PCB mixtures probably represent the co-occurrence of high levels of these compounds in the Great Lakes and in many northeastern and midwestern rivers.

Temporal and Geographic Trends in the Levels of Specific Compounds

DDT and its Metabolites

As in previous years (Schmitt et al. 1981), residues of DDT or its metabolites were present at every NPMP station during the period 1976–79 (Table 4). Maximum total DDT residues (wet weight, about 4 µg/g in both collection periods; lipid weight, 211 µg/g in 1976–77 and 104 µg/g in 1978–79) were still high, but were markedly lower than the maxima of 13–48 µg/g wet weight and 402–873 µg/g

Table 3. *Statistical analysis of 35 interlaboratory cross-check samples for 1976–77 and 33 for 1978–79 (CNFRL = Columbia National Fisheries Research Laboratory; check lab = a commercial laboratory for 1976–77 and the Great Lakes Fishery Research Laboratory for 1978–79).*

Collection period and residue	Analysis of variance						Regression[b]			No. of positives	
	Wet-weight residues			Lipid-weight residues							
	Geometric mean			Geometric mean							
	CNFRL	Check lab	F[a]	CNFRL	Check lab	F[a]	Slope	Intercept	*r*	CNFRL	Check lab
1976–77											
Lipid (%)	*7.73*	*9.02*	*14.54***	–	–	–	*0.841*	*2.538***	*0 811*	35	35
p,p'-DDE	0.36	0.34	0.17	3.57	2.80	4.21*	1.161	-0.062	0.965	34	34
p,p'-DDD	0.13	0.11	0.16	1.49	1.10	1.35	0.096**	0.106**	0.159	31	29
p,p'-DDT	0.10	0.05	3.47	0.77	0.28	9.37**	0.449**	0.007	0.698	24	5
ΣDDT[c]	0.54	0.50	0.28	5.54	4.31	2.42	0.839*	0.051	0.899	34	34
Aroclor 1254	0.87	1.27	14.95**	7.07	10.66	6.84*	1.115	0.446	0.884	29	33
Toxaphene	0.23	0.14	16.67**	3.42	0.33	29.90**	1.135	-0.435	0.700	20	2
Endrin	0.02	0.02	0.48	0.19	0.18	0.33	2.565**	-0.20*	0.862	33	12
Dieldrin[d]	0.10	0.12	0.26	0.76	0.76	0.07	0.637**	0.075	0.886	18	33
Heptachlor[e]	0.03	0.03	1.28	0.19	0.19	9.59**	1.488*	-0.006	0.983	17	27
α-BHC	0.03	0.01	7.82**	0.39	0.09	15.45**	0.009**	0.009	0.002	30	7
cis-Chlordane	1.43	1.10	0.98	0.95	0.63	10.23**	1.131	-0.023	0.926	31	19
trans-Chlordane	0.05	0.07	4.84*	0.50	0.57	1.12	1.305	0.014	0.762	32	12
cis-Nonachlor	0.00	0.02	5.17*	0.00	0.17	9.32**	–	–	–	15	0
trans-Nonachlor	0.00	0.05	7.94**	0.00	0.36	17.24**	–	–	–	20	0
γ-BHC	0.00	0.01	2.84	0.00	0.11	3.38	–	–	–	10	0
HCB	0.00	0.01	5.38*	0.00	0.15	5.67*	–	–	–	11	0
1978–79											
Lipid (%)	*8.1*	*7.9*	*0.28*	–	–	–	*0.972*	*0.135*	0.930	33	33
p,p'-DDE	0.30	0.31	0.18	2.84	2.80	0.02	1.199**	-0.032	0.961	33	33
p,p'-DDD	0.13	0.10	6.77*	1.29	0.86	10.63**	0.720**	0.010	0.814	32	24
p,p'-DDT	0.06	0.05	0.30	0.43	0.29	2.80	0.877**	0.005	0.912	19	12
ΣDDT[c]	1.35	1.24	1.27	4.31	3.91	1.57	1.104	-0.050	0.957	33	33
Aroclor 1248	0.28	0.56	11.91**	1.53	4.74	19.74**	1.517	0.166	0.918	13	28
Aroclor 1254	0.65	0.32	45.79**	6.42	2.93	61.38**	0.476**	-0.013	0.925	33	31
Aroclor 1260	0.50	0.33	26.12**	4.53	3.28	13.12**	0.548**	0.037	0.989	28	29
ΣPCB[f]	1.21	1.07	1.07	11.73	11.15	0.15	0.787	0.068	0.946	33	32
Dieldrin[d]	0.07	0.06	1.50	0.58	0.45	2.16	0.590**	0.014	0.778	29	23
cis-Chlordane	0.07	0.05	1.72	0.77	0.49	5.16*	0.605**	0.011	0.486	31	12
trans-Chlordane	0.04	0.03	2.23	0.37	0.27	2.60	0.714**	<0.001	0.661	25	12

[a] Degrees of freedom = 1,34 for 1976–77 and 1,32 for 1978–79; * = $\underline{P} \leq 0.05$; ** = $\underline{P} \leq 0.01$.

[b] Slope, intercept, and product–moment correlation coefficient (*r*) values for the equation: $y = a + bx$, where y = cross-check value; x = original CNFRL value; a = intercept; and b = slope. Significance levels in tests of the hypotheses $a = 0.0$ and $b = 1.0$: * = $\underline{P} \leq 0.05$; ** = $\underline{P} \leq 0.01$.

[c] Sum of *p,p'*-DDE, *p,p'*-DDD, and *p,p'*-DDT.

[d] Includes aldrin.

[e] Includes heptachlor epoxide.

[f] See text for definition of total PCB used by each laboratory.

Table 4. *Geometric mean*[a] *and maximum residue concentrations (μg/g, whole fish; all residue minima ≤ detection threshold), and percent occurrence (percentage of stations showing detectable residues in at least one sample) for the 1976–77 and 1978–79 collection periods.*[b]

Residue and collection period	Wet weight		Lipid weight		Percent occurrence
	Mean[a]	Maximum	Mean[a]	Maximum	
p,p'-DDE					
1976–77	0.26	5.21	2.81	170.80	100.0
1978–79	0.25	6.76	2.89	92.33	100.0
p,p'-DDD					
1976–77	0.08	1.77	1.00	57.10	99.1
1978–79	0.09	3.01	1.03	26.16	100.0
p,p'-DDT					
1976–77	0.05	1.99	0.45	32.11	83.0
1978–79	0.04	1.95	0.38	19.14	74.1
ΣDDT[c]					
1976–77	0.37	6.54	4.08	210.98	100.0
1978–79	0.36	10.62	4.19	103.69	100.0
Aroclor 1242					
1976–77	ND	ND	ND	ND	ND
1978–79	NA	NA	NA	NA	NA
Aroclor 1248					
1976–77	0.15	51.90	0.64	465.29	38.7
1978–79	0.14	66.91	0.73	348.46	41.7
Aroclor 1254					
1976–77	0.47	16.40	4.04	278.25	84.0
1978–79	0.46	22.05	4.66	114.85	98.1
Aroclor 1260					
1976–77	0.87	70.60	7.99	738.61	91.5
1978–79	0.84	92.77	8.79	483.17	98.1
Toxaphene					
1976–77	0.35	12.70	1.91	410.68	58.5
1978–79	0.32	18.70	1.91	162.61	61.1
α-BHC					
1976–77	0.02	0.30	0.26	7.33	89.6
1978–79	<0.01	0.04	0.05	2.00	53.7
γ-BHC					
1976–77	0.01	0.28	0.05	9.33	31.1
1978–79	<0.01	0.02	0.01	0.56	8.3
HCB					
1976–77	0.09	0.70	0.09	6.42	45.3
1978–79	0.03	0.13	0.03	1.69	21.3
Dacthal					
1976–77	NA	NA	NA	NA	NA
1978–79	0.01	1.22	0.05	18.77	34.3
Dieldrin					
1976–77	0.06	5.01	0.50	185.63	93.4
1978–79	0.05	3.72	0.40	41.34	80.1
Endrin					
1976–77	0.01	0.40	0.10	4.67	47.2
1978–79	<0.01	0.11	0.03	0.82	32.4
Heptachlor					
1976–77	0.01	0.78	0.01	8.48	52.8
1978–79	0.02	1.17	0.02	14.12	54.6

Table 4. *Continued.*

cis-Chlordane					
1976–77	0.06	0.93	0.61	10.11	92.5
1978–79	0.07	2.53	0.66	28.50	94.4
trans-Chlordane					
1976–77	0.03	0.32	0.30	3.26	84.0
1978–79	0.03	0.54	0.25	5.87	70.4
cis-Nonachlor					
1976–77	0.01	0.49	0.13	5.21	46.2
1978–79	0.03	0.71	0.30	7.22	73.1
trans-Nonachlor					
1976–77	0.03	0.95	0.30	10.11	70.8
1978–79	0.05	2.17	0.52	24.11	92.6
Oxychlordane					
1976–77	NA	NA	NA	NA	NA
1978–79	0.01	0.74	0.09	8.04	39.8

[a] "Geometric" means were computed by transforming all values to the $\log_{10}$ (residue + 1.0) scale, averaging the transformed values for all samples present from each collection period, and back-transforming the means to the arithmetic scale.

[b] NA = not analyzed; ND = not detected.

[c] Sum of *p,p'*-DDE, *p,p'*-DDD, and *p,p'*-DDT.

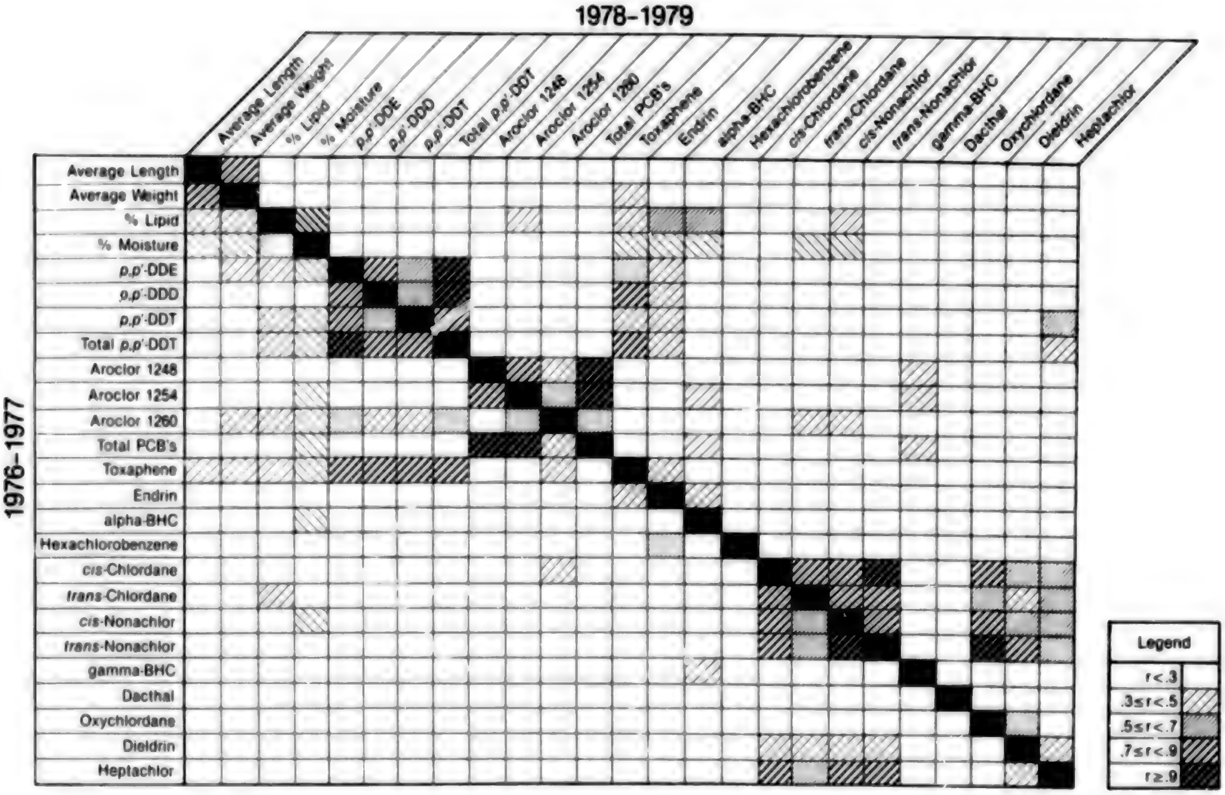


Fig. 2. Intercorrelations among wet-weight organochlorine residues in freshwater fish, 1976–79. In the hatching, lines sloping upward to the right indicate positive correlations; those to the left, negative correlations.

Table 5. *Results of analysis of variance, as F-values and significance levels[a], of wet-weight and lipid-weight residue concentrations and percent lipid, for the 1976–79 (102 stations) and 1974–79 (78 stations) collection periods.*

Collection period, degrees of freedom, residue, and basis (wet or lipid weight)	Source of variation: Locations (*L*)	Source of variation: Collection periods (*P*)	Source of variation: *L* × *P*	Source of variation: Species (within *L* and *P*)	Contrast: 1976–77 vs. 1978–79	Contrast: 1974 vs. 1976–79	Error mean square (× 10³)	r^2 (× 10²)
1976–79								
Degrees of freedom	*101*	*1*	*101*	*209*	–	–	–[b]	–
Lipid (%)	*4.16**	*1.94*	*1.04*	*3.60***	–	–	*1.50*	*94.2*
p,p'-DDE								
Wet	6.02**	0.40	0.65	4.08**	–	–	2.60	95.1
Lipid	7.06**	0.13	0.95	2.75**	–	–	25.40	94.6
p,p'-DDD								
Wet	7.60**	0.67	0.64	1.46*	–	–	0.80	91.1
Lipid	8.00**	0.41	0.97	1.93**	–	–	12.20	93.4
p,p'-DDT								
Wet	4.04**	3.57	0.91	2.50**	–	–	0.70	91.6
Lipid	4.76**	2.59	1.04	2.53**	–	–	12.00	92.9
ΣDDT[c]								
Wet	6.53**	0.52	0.68	3.49**	–	–	3.90	95.0
Lipid	7.70**	0.18	1.02	2.38**	–	–	28.80	94.6
Aroclor 1248								
Wet	15.83**	0.01	1.91**	1.09	–	–	7.20	93.3
Lipid	10.17**	1.10	2.95**	1.13	–	–	60.10	91.2
Aroclor 1254								
Wet	10.48**	0.07	0.72	1.72**	–	–	8.10	93.8
Lipid	8.56**	5.69**	1.03	1.36**	–	–	80.60	91.3
Aroclor 1260								
Wet	8.88**	0.06	0.80	2.49**	–	–	4.40	95.1
Lipid	8.42**	1.38	0.93	1.74**	–	–	59.90	92.9
ΣPCB[d]								
Wet	13.24**	<0.01	0.69	1.73**	–	–	14.10	94.1
Lipid	11.94**	5.50*	0.99	1.40**	–	–	78.80	93.4
Toxaphene								
Wet	12.01**	1.85	1.08	2.93**	–	–	5.30	96.5
Lipid	8.67**	0.12	1.19	2.36**	–	–	56.00	95.0
α-BHC								
Wet	6.13**	29.21**	6.08**	0.80	–	–	0.10	93.8
Lipid	5.33**	50.04**	5.92**	1.03	–	–	2.50	92.4
γ-BHC (lindane)								
Wet	76.47**	3.91*	74.67**	0.20	–	–	0.01	99.5
Lipid	19.60**	4.73*	19.33**	2.80**	–	–	0.20	98.8
HCB								
Wet	30.39**	2.82	25.71**	0.45	–	–	0.05	94.6
Lipid	8.88**	9.44**	3.20**	0.82	–	–	3.00	87.6
Dieldrin[e]								
Wet	6.02**	0.13	0.94	1.86**	–	–	1.30	80.8
Lipid	8.99**	2.41	1.01	2.06**	–	–	11.00	93.2
Endrin								
Wet	3.52**	8.49**	2.01**	6.00**	–	–	0.01	97.0
Lipid	4.86**	13.31**	2.76**	2.77**	–	–	0.90	94.6
Heptachlor[f]								
Wet	7.87**	9.91**	0.87	0.59	–	–	0.40	98.2
Lipid	14.01**	12.92**	1.49**	0.61	–	–	6.00	94.9
cis-Chlordane								
Wet	12.88**	3.45	1.89**	2.26**	–	–	0.30	96.1
Lipid	14.54**	4.27*	1.40*	1.62**	–	–	8.70	94.6

Table 5. *Continued.*

Collection period, degrees of freedom, residue, and basis (wet or lipid weight)	Source of variation				Contrast			
	Locations (*L*)	Collection periods (*P*)	*L* × *P*	Species (within *L* and *P*)	1976–77 vs. 1978–79	1974 vs. 1976–79	Error mean square (× 10^3)	r^2 (× 10^2)
trans-Chlordane								
Wet	7.14**	<0.01	1.05	2.50**	–	–	0.10	94.6
Lipid	12.24**	0.98	1.41*	1.68**	–	–	3.90	94.5
cis-Nonachlor								
Wet	9.73**	29.07**	1.55*	4.40**	–	–	0.10	97.5
Lipid	10.93**	49.34**	2.47*	2.85**	–	–	3.40	95.0
trans-Nonachlor								
Wet	9.98**	15.82**	1.43*	5.00**	–	–	0.10	97.7
Lipid	9.23**	25.75**	2.79**	2.30**	–	–	5.90	95.4
1974–79								
Degrees of freedom	*77*	*2*	*154*	*305*	*1*	*1*	–[b]	–
Lipid (%)	*4.46***	*0.46*	*1.09*	*3.58***	*0.59*	*0.38*	*1.50*	*93.5*
p,p'-DDE								
Wet	6.56**	13.45**	0.80	4.30**	0.06	24.50**	3.40	95.1
Lipid	8.37**	11.71**	1.17	2.75**	<0.01	24.45**	34.30	94.2
p,p'-DDD								
Wet	4.53**	13.13**	0.56	2.13**	0.63	26.91**	2.70	88.1
Lipid	7.18**	3.59*	1.21	1.97**	0.27	7.26**	24.80	91.3
p,p'-DDT								
Wet	3.26**	1.21	1.17	3.00**	0.85	1.65	0.80	90.9
Lipid	3.79**	0.78	1.50**	2.57**	1.05	0.62	17.30	92.2
ΣDDT[c]								
Wet	7.28**	15.07**	0.85	3.69**	0.04	31.37**	5.30	94.8
Lipid	8.85**	10.51**	1.23	2.49**	0.03	21.93**	38.90	94.3
Aroclor 1254								
Wet	11.47**	23.77**	1.29*	2.68**	0.10	50.04**	11.90	95.3
Lipid	9.15**	7.79**	1.20	1.52**	0.38	15.95**	134.70	93.3
Aroclor 1260								
Wet	9.98**	44.93**	3.21**	2.00**	0.11	93.62**	4.20	95.2
Lipid	9.62**	102.68**	3.78**	1.28*	0.57	213.38**	56.70	93.9
ΣPCB[d]								
Wet	15.37**	1.53	0.93	2.39**	<0.01	<0.01	15.60	95.4
Lipid	11.59**	0.67	0.94	2.27**	<0.01	<0.01	83.70	94.4
Toxaphene								
Wet	21.71**	8.66**	4.02**	1.58**	0.96	17.24**	7.30	94.5
Lipid	14.80**	28.57**	3.03**	1.72**	0.17	59.56**	58.60	94.2
Dieldrin[e]								
Wet	8.63**	2.48	1.00	2.11**	0.06	5.10*	1.80	90.6
Lipid	15.91**	1.51	1.69**	1.63**	0.90	2.21	19.10	94.4
Endrin								
Wet	3.90**	10.62**	2.11**	2.50**	10.84**	11.79**	0.02	97.0
Lipid	5.84**	16.37**	3.74**	0.53	15.40**	19.48**	3.69	95.1

[a] *$P \le 0.05$; ** $P \le 0.01$.

[b] Error degrees of freedom = 186 for 1976–79 and 268 for 1974–79.

[c] Sum of *p,p'*-DDT homologs.

[d] Sum of Aroclors 1248, 1254, and 1260 for 1976–79 and of Aroclors 1254 and 1260 for 1974.

[e] Includes aldrin for 1976–77.

[f] Includes heptachlor epoxide.

Table 6. *Mean wet-weight and lipid-weight[a] residues (whole fish) based on 102 stations (1976–79) and 78 stations (1974–79). Within each set of two columns for 1976–79 and three columns for 1974–79, means in italics are not significantly different. See text for description of transformations used.*

Compound	Wet-weight means 1976–79: 1976–77	1976–79: 1978–79	1974–79: 1974	1974–79: 1976–77	1974–79: 1978–79	Lipid-weight means 1976–79: 1976–77	1976–79: 1978–79	1974–79: 1974	1974–79: 1976–77	1974–79: 1978–79
DDT Homologs										
p,p'-DDE	*0.28*	*0.26*	0.41	*0.27*	*0.26*	*3.01*	*3.08*	4.52	*3.09*	*3.09*
p,p'-DDD	*0.09*	*0.09*	0.15	*0.09*	*0.10*	*1.04*	*1.08*	1.38	*1.08*	*1.14*
p,p'-DDT	*0.06*	*0.04*	*0.06*	*0.05*	*0.04*	*0.49*	*0.40*	*0.40*	*0.50*	*0.41*
ΣDDT[b]	*0.40*	*0.37*	0.57	*0.38*	*0.37*	*4.34*	*4.46*	6.39	*4.46*	*4.53*
PCB's										
Aroclor 1248	*0.14*	*0.14*	–	–	–	*0.58*	*0.74*	–	–	–
Aroclor 1254	*0.47*	*0.47*	0.96	*0.53*	*0.50*	*4.07*	*4.99*	7.84	*4.95*	*5.40*
Aroclor 1260	*0.37*	*0.38*	0.06	*0.39*	*0.41*	*3.34*	*3.68*	0.29	*3.92*	*4.39*
ΣPCB[c]	*0.87*	*0.86*	*1.09*	*0.97*	*0.97*	8.00	9.56	*10.52*	*9.71*	*11.03*
Others										
Toxaphene	*0.37*	*0.33*	0.16	*0.38*	*0.32*	*2.02*	*1.94*	0.47	*2.19*	*2.03*
HCB	0.01	<0.01	–	–	–	0.09	0.03	–	–	–
α-BHC	0.02	<0.01	–	–	–	0.27	0.05	–	–	–
γ-BHC	0.01	<0.01	–	–	–	0.06	0.01	–	–	–
Dieldrin[d]	*0.06*	*0.05*	0.09	*0.06*	*0.06*	*0.51*	*0.44*	0.67	*0.59*	*0.59*
Endrin	0.01	<0.01	*<0.01*	0.01	*<0.01*	0.10	0.03	0.01	0.12	0.04
Heptachlor[e]	0.01	0.02	<0.01	0.01	0.03	0.11	0.19	<0.01	0.12	0.22
cis-Chlordane	0.06	0.07	–	–	–	0.61	0.71	–	–	–
trans-Chlordane	*0.03*	*0.03*	–	–	–	*0.28*	*0.26*	–	–	–
cis-Nonachlor	0.01	0.03	–	–	–	0.12	0.34	–	–	–
trans-Nonachlor	0.03	0.05	–	–	–	0.29	0.57	–	–	–

[a] Percent lipid, 1976–79: 1976–77, 6.71; and 1978–79, 6.24. Percent lipid, 1974–79: 1974, 6.08; 1976–77, 6.41; and 1978–79, 6.12. Within each combination of years, these means were not significantly different.

[b] *p,p'*-homologs.

[c] Aroclors 1254 and 1260 for 1974; and 1248, 1254, and 1260 for 1976–79.

[d] Includes aldrin for 1976–77.

[e] Includes heptachlor epoxide.

lipid weight reported for the period 1970–74. This decline in the annual total DDT maxima was reflected in corresponding decreases for all three *p,p'*-homologs (DDE, DDD, and DDT). Our ANOVA showed that differences in mean residues of the DDT homologs between 1976–77 and 1978–79 were not significant (Tables 5 and 6). Both lipid-weight and wet-weight residues for the period 1976–79 averaged significantly lower than corresponding values for 1974 for total DDT and for all *p,p'*-homologs except *p,p'*-DDT (Tables 5 and 6). However, *p,p'*-DDT residues in years after 19[illegible] were approaching the limits of detection. Consequently, there were no significant time-period differences for *p,p'*-DDT. The homolog DDE represented 70% of the total *p,p'*-DDT homologs for both 1976–77 and 1978–79 (Fig. 3) – a percentage that was unchanged from 1974 (Schmitt et al. 1981). Before 1974, a steady increase in the relative amount of DDE accompanied an overall decline in total DDT residues.

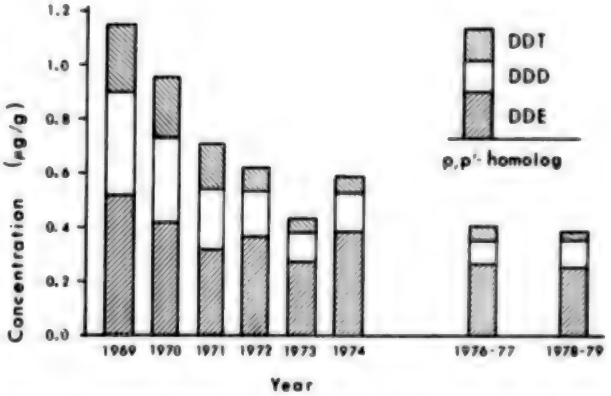


Fig. 3. Contributions of three *p,p'*-DDT homologs to total *p,p'*-DDT, 1969–79.

Analysis of covariance revealed that most of the 78 stations with continuous data since 1974 showed unchanging or declining lipid weight total DDT residues, but significant increases occurred in one or more homologs at nine stations (Table 7). Residues at most of these sites were low, and most increases were attributable to DDE. However, significant increases in other homologs occurred at stations 14, 15, 24, 30, 57, 80, 100, and 113 (Table 7). Of the stations showing increases, total DDT exceeded 1.0 μg/g in at least one sample from stations 14 (Tombigbee River at McIntosh, Alabama), 42 (Snake River at Lewiston, Idaho), 57 (Altamaha River at Doctortown, Georgia), and 80 (Yazoo River at Redwood, Mississippi).

When we ranked the top 10 stations in order of decreasing mean residue levels for six compounds (Table 8), station 16 (Rio Grande at Mission, Texas) moved from fourth highest in *p,p'*-DDE and total DDT in 1976–77 to second highest in 1978–79. High residues of DDT also occurred regularly at stations 80, 14, and 28 (Arkansas River at Pine Bluff, Arkansas), and at all three Lake Michigan stations (21, 104, and 105). Although most of the stations evidencing high levels of DDT probably reflect a long history of agricultural use, at least two stations also have known or suspected point sources of DDT contamination: (1) McIntosh, Alabama (station 14) is the home of a chemical manufacturing complex that produced DDT commercially until the mid-1960's (D. Schultz, personal communication). Our finding of high levels (up to 2.5 μg/g) of *o,p'*-DDT homologs in fish from this station is further evidence of non-agricultural source; *o,p'*-homologs are considered to be impurities in technical DDT, and they are only rarely present in appreciable concentrations in environmental samples (Henderson et al. 1971). (2) Pine Bluff, Arkansas (station 28), is near the site of a government arsenal complex to which elevated DDT residues may be attributable (D. Schultz, personal communication).

A high percentage of *p,p'*-DDT in a whole-fish sample probably indicates that the DDT was accumulated recently. Samples in which *p,p'*-DDT represented the highest percentage of the total *p,p'*-homologs – about 67% in 1977 and 74% in 1979 – were collected at station 100 (Manoa Stream, Honolulu, Hawaii); however, total DDT residues were generally low at this station (<0.5 μg/g in all samples). A high percentage of *p,p'*-DDT (>20%) accompanied high total DDT residues (≥1.0 μg/g) in at least one sample from each of the following stations: 115, 104, 55, 14, 21, 80, 4, 42, 107, and 22 in 1976–77; and 115, 21, and 14 in 1978–79 (Appendix A). The high percentage of *p,p'*-DDT at station 14 (McIntosh, Alabama) is probably due to the presence of a manufacturing facility, as mentioned previously. High residue levels (2.9 μg/g total DDT) and high percentages of *p,p'*-DDT (36–40%) were present in striped mullet collected at station 115 (Colorado River at Yuma, Arizona) during both periods. (Corresponding levels and percentages in other samples listed above were considerably lower.) We attribute the higher residues and percentages in the striped mullet to the migratory habits of this species. The fish sampled probably frequented sections of the Lower Colorado River constituting the international border with Mexico. This area is intensively farmed, and DDT is still used (D. Stalling, personal communication).

Polychlorinated Biphenyls

The occurrence of PCB's apparently increased between 1974 and 1978–79; they were found at 93% of the stations sampled in 1974 (Schmitt et al. 1981), 92% in 1976–77, and 98% in 1978–79 (Table 4). Maximum concentrations did not change appreciably; concentrations approaching 100 μg/g wet weight and 500 μg/g lipid weight were measured as recently as 1978 (Table; Appendix A).

Of the four PCB mixtures measured, residues resembling Aroclor 1254 were the most widespread; they were found at 84% of the stations sampled in 1976–77, and at 98% in 1978–79 (Table 4). Residues resembling Aroclor 1260 were present at 84% of the stations sampled in 1976–77 and at 88% in 1978–79, and Aroclor 1248 residues were present at 39% of the stations in 1976–77 and 42% in 1978–79. No residues resembling Aroclor 1242 were found in 1976–77, as compared with about 14% reported in 1973 and about 5% in 1974 (Schmitt et al. 1981). This apparent disappearance of Aroclor 1242 residues in fish is not surprising; unlike the more highly chlorinated components that dominate the Aroclor 1248, 1254, and 1260 mixtures, the components that are most prevalent in the 1242 mixture are rapidly degraded. The residues that remain respond to chromatography in a manner that makes them resemble the other mixtures.

Significant differences between means for 1976–77 and 1978–79 were revealed by ANOVA only for lipid weight total PCB; none of the individual Aroclor mixtures nor the wet weight total PCB residues differed significantly for these years (Tables 5 and 6). When the 1974 data were also considered, 1974 residues of Aroclors 1254 and 1260 were significantly different (1254 higher, 1260 lower) from corresponding residues for 1976–79 (Table 6). However, total PCB residues were not significantly different. Since a different laboratory performed the 1974 analyses, the apparent anomaly most likely resulted from differences between laboratories in the interpretation of the multiple chromatographic peaks typical of PCB mixtures. The 1974 analyses were performed by the Denver Wildlife Research Center (DWRC), FWS. Chemists at CNFRL who performed cross-check analyses on 47 of these 1974 samples found that, by comparison, DWRC slightly underestimated Aroclor 1260 but slightly overestimated Aroclor 1254 and total PCB (Schmitt et al. 1981). The overestimate of Aroclor 1254 was believed to have resulted from DWRC's inclusion of some early eluting peaks that CNFRL has routinely included in its estimates of Aroclor 1248, but excluded from Aroclor 1254. Results of ANOVA for 1974–79 data have a pattern that resembles the 1974 cross-check results – declining Aroclor 1254 and increasing Aroclor 1260 (Table 6). This similarity between the results presented in Table 6 and the

Table 7. *Significance and direction of changes in lipid-weight residues of eight compounds at 78 NPMP stations, 1974–79: +, significant increase; –, significant decrease; 0, no significant change.*

	DDT homologs				PCB's		Other insecticides	
Station[a]	*p,p'*-DDE	*p,p'*-DDD	*p,p'*-DDT	ΣDDT[b]	Aroclor 1254	ΣPCB[c]	Dieldrin[d]	Toxaphene
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	+
3	–	–	0	–	–	0	0	0
5	0	–	0	0	+	0	+	0
7	0	+	0	0	0	0	0	0
8	0	0	0	0	+	0	0	0
9	–	0	0	0	0	0	0	–
10	0	0	0	0	0	0	0	0
12	–	–	0	–	0	0	0	0
13	0	–	0	–	0	0	0	–
14	+	+	+	+	+	+	0	+
15	0	+	0	+	0	0	+	0
16	0	0	0	0	0	0	0	+
18	–	–	–	–	–	–	0	0
20	0	0	–	0	0	0	0	+
21	0	0	0	0	0	0	0	+
22	–	0	–	–	–	0	0	+
23	0	0	0	0	–	0	0	0
24	+	+	0	+	0	0	0	0
25	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	–	0
27	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	+
29	0	0	0	0	0	+	0	+
30	0	–	+	0	0	0	0	0
31	–	0	0	–	0	0	0	+
32	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	+
35	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0
39	0	–	0	0	–	–	0	+
41	–	0	0	–	–	0	0	0
42	0	+	0	0	0	0	0	+
43	0	0	0	0	0	0	0	0
44	–	–	–	–	+	0	–	0
45	0	–	0	0	0	0	0	0
46	–	0	0	0	0	0	0	0
47	–	–	0	–	0	0	0	0
51	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	+
55	0	0	0	0	0	0	0	+
57	–	0	+	–	–	0	0	0
59	0	0	0	0	0	0	0	0
62	0	0	0	0	0	0	0	0
63	0	0	0	0	0	+	0	0
66	0	–	0	0	–	0	0	0
67	0	–	0	0	–	–	0	0
68	+	0	0	+	0	0	–	0
69	+	–	0	0	–	0	–	0
70	0	0	0	0	0	0	+	+
72	0	0	0	0	0	0	0	0
73	0	+	0	0	0	0	0	+
74	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	+
76	0	0	–	0	0	0	–	+

Table 7. *Continued.*

	DDT homologs				PCB's		Other insecticides	
Station[a]	*p,p'*-DDT	*p,p'*-DDD	*p,p'*-DDT	ΣDDT[b]	Aroclor 1254	ΣPCB[c]	Dieldrin[d]	Toxaphene
80	0	0	+	0	0	0	0	–
81	0	0	0	0	0	0	0	+
83	0	0	0	0	–	0	–	+
85	0	–	–	0	–	–	0	0
86	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0	+
89	0	0	0	0	0	0	0	+
90	0	0	–	0	0	0	0	+
91	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	+
97	–	–	0	–	0	0	0	0
98	0	0	0	0	0	0	0	0
99	0	0	0	0	0	+	–	0
100	0	0	+	0	0	0	–	0
101	0	–	0	0	0	0	0	0
105	0	0	–	–	–	0	0	+
106	0	0	0	0	0	0	0	+
107	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0
111	0	0	0	0	–	–	0	0
113	+	+	0	+	0	+	0	+

[a] See Fig. 1 for locations of stations.

[b] Homologs of *p,p'*-DDT.

[c] Aroclors 1254 and 1260 for 1974; 1248, 1254, and 1260 for 1976–79.

[d] Includes aldrin for 1976–77.

cross-check analyses of the 1974 samples (Schmitt et al. 1981) suggests that the changes detected in mean residues of Aroclors 1254 and 1260 between 1974 and 1978–79 were artifacts of analysis. Most likely, the results for total PCB best represent the national trend in PCB residues in freshwater fish: no significant change from 1974 through 1978–79.

Total PCB residues also changed little on a station-by-station basis from 1974 (Schmitt et al. 1981) to 1978–79 (Table 7). Significant declines in lipid weight total PCB residues occurred at stations 18, 39, 67, 85, and 111. At all of these sites the residues exceeded 1.0 μg/g wet weight in 1974. Significant increases were restricted to stations 14, 29, 63, and 113. Aroclor 1254 residues declined significantly at 14 stations, increasing only at stations 5, 8, 14, and 44 (Table 7). At none of the four stations showing significant increases did the residues exceed 1.5 μg/g wet weight.

Because Aroclor 1248 residues were not measured in 1974, no station-by-station analysis of temporal trends could be performed. However, the lower chlorinated components present in Aroclor 1248 are less persistent in the environment than are the more highly chlorinated components that dominate the Aroclor 1254 and 1260 mixtures. Therefore the presence in fish of PCB's that resemble Aroclor 1248 may indicate the influx of "fresh," unweathered PCB's. Laboratory studies have consistently shown that mixtures containing these less-chlorinated components, like Aroclor 1248, are considerably more toxic to fish than are mixtures composed predominantly of more highly chlorinated components (Stalling et al. 1979). Significant Aroclor 1248 residues (≥ 1.0 μg/g wet weight) were found at stations 2, 3, 5, and 53 in the Northeast; stations 23, 24, 68, and 69 in the Ohio River system; stations 83 and 89 in the Missouri River system; station 72 in the Mississippi River at Woodman, Wisconsin; station 100 in Manoa Stream, Honolulu, Hawaii; and at all of the active stations in Lakes Michigan, Huron, St. Clair, and Ontario (17, 18, 20, 21, 105, 106, 107, and 109) except station 104 (Lake Michigan at Beaver Island, Michigan).

Among the PCB residues examined, the station–year interaction term in the overall ANOVA for 1976–79 (Table 5) was significant only for Aroclor 1248. Significance of this term implies that all the stations were not displaying the same temporal trends (Schmitt 1981) – suggesting that some stations were continuing to receive PCB residues containing early eluting components, whereas most received none, or only material that was weathered or that eluted later.

The geographic distribution of stations with the highest PCB residues did not change from that in 1970–74 (Schmitt et al. 1981); concentrations still tended to be highest in the

Table 8. *Ranking of NPMP stations in order of decreasing geometric mean concentrations of residues of selected compounds for the collection periods 1976-77 and 1978-79. See Fig. 1 for locations of stations.*

	1976-77		1978-79		1976-77		1978-79		1976-77		1978-79	
Rank	Station No.	Mean	Station No.	Mean	Station No.	Mean	Station No.	Mean	Station No.	Mean	Station No.	Mean
	p,p'-DDE				*p,p'*-DDT				ΣDDT[a]			
1	104	2.94	80	5.02	104	1.12	80	0.80	80	4.70	80	7.64
2	80	2.42	16	2.31	80	0.92	14	0.52	104	4.47	16	2.58
3	21	1.93	28	1.49	21	0.50	115	0.39	21	2.66	105	1.97
4	16	1.67	105	1.35	115	0.42	100	0.17	16	1.78	28	1.88
5	105	1.20	4	1.31	14	0.29	99	0.17	105	1.56	14	1.72
6	107	1.01	14	1.14	22	0.22	81	0.16	14	1.42	4	1.65
7	14	0.93	21	1.05	105	0.19	105	0.15	107	1.38	71	1.63
8	4	0.89	104	0.90	9	0.18	104	0.15	4	1.16	21	1.48
9	9	0.73	71	0.85	55	0.17	30	0.14	115	1.09	115	1.38
10	48	0.70	115	0.83	33	0.15	21	0.14	44	0.96	104	1.24
Median	–	0.16	–	0.15	–	0.01	–	0.02	–	0.20	–	0.24
	ΣPCB[b]				Toxaphene				Dieldrin[c]			
1	3	33.9	3	44.1	80	8.73	80	12.97	100	1.22	100	1.48
2	69	6.0	2	11.0	104	7.21	105	4.33	90	0.94	105	0.57
3	54	5.2	24	6.4	21	4.96	102	4.25	105	0.49	104	0.42
4	107	5.1	69	5.9	22	3.52	104	3.86	104	0.39	21	0.35
5	21	5.0	54	5.3	105	2.94	21	3.62	21	0.31	83	0.30
6	2	5.0	107	4.8	102	2.90	83	1.92	73	0.24	31	0.20
7	111	4.5	105	4.7	76	2.82	81	1.73	26	0.22	26	0.18
8	105	4.3	23	4.4	103	2.12	71	1.63	68	0.16	75	0.18
9	18	4.2	20	3.4	14	2.04	59	1.44	15	0.14	68	0.15
10	24	3.9	21	3.2	9	1.79	30	1.35	69	0.12	89	0.14
Median	–	0.5	–	0.5	–	<0.01	–	0.13	–	0.01	–	0.02

[a] Sum of *p,p'*-homologs.
[b] Aroclors 1248, 1254, and 1260.
[c] Includes aldrin for 1976-77.

industrialized regions of the Northeast and Midwest (Table 8). Significant PCB residues (≥1.0 μg/g wet weight) were typical of fish from most waters contiguous to major population centers. Trace concentrations of the more persistent, highly chlorinated residues continued to be detected in fish from almost every major river in the United States. The ubiquity of PCB residues probably results from atmospheric transport, from the dispersal of contaminated sediment, and from patterns of continued use and disposal.

Cyclodiene Insecticides

Of the cyclodiene insecticides, aldrin and dieldrin have received the most notoriety. Nationally, mean dieldrin residues have historically been low (<1.0 μg/g wet weight), compared with residues of DDT and PCB's. Nevertheless, ANOVA revealed a statistically significant, albeit small, downward trend in mean dieldrin residues after 1974 (Tables 6 and 7). Analysis of covariance showed significant declines at eight stations and increases at three stations during this period (Table 7). However, there was no significant change from 1976-77 to 1978-79 (Tables 6 and 7). Levels were relatively low (<0.2 μg/g) at the stations showing increases; levels were much higher at many of the stations with declining residues. Among the group showing declines were stations in the Corn Belt (26, 68, 69, and 83) and in Hawaii (99 and 100). As in 1974, dieldrin residues were highest in fish from Hawaii (station 100), from Lake Michigan (stations 104, 105, and 21), and from the major rivers in the Midwest (Table 8). At station 76 (Mississippi River at Memphis, Tennessee), elevated levels of dieldrin, endrin, and other cyclodiene compounds before 1975 were attributed to the presence of a pesticide manufacturing facility (Schmitt et al. 1981). However, dieldrin residues at this station ranked only 11th highest in both 1976-77 and 1978-79 (Table 8), and residues in fish declined significantly after 1974 (Table 7). Because aldrin is rapidly metabolized to dieldrin (Schnoor 1981), residues are seldom seen in fish, and if present indicate recent exposure. Aldrin residues were detected in 1977 samples from station 90 (Kansas River at Bonner Springs, Kansas) and station 76. Because so little aldrin was detected in the 1976–77 samples, 1978–79 samples were screened only for aldrin; none was found.

The International Joint Commission (1979) reported that dieldrin levels in whole bloaters from Lake Michigan increased from 0.27 μg/g in 1969 to 0.55 μg/g in 1978. Our data corroborate these findings; dieldrin residues ranged from 0.37 to 0.72 μg/g wet weight in five bloater samples from three Lake Michigan stations in 1977, and from 0.27 to 0.72 μg/g in six bloater samples collected from these stations in 1979 (Appendix A). Residues in lake trout from these stations ranged from 0.29 to 0.33 μg/g in 1977, and from 0.36 to 0.50 μg/g in 1979. Dieldrin residues in samples from Lake Superior remained low (<0.1 μg/g) throughout this period (Appendix A).

Statistical analysis of 1974 laboratory cross-check results showed that detection thresholds for dieldrin were lower at CNFRL than at DWRC (Schmitt et al. 1981). It is therefore impossible to compare percent occurrence of dieldrin in 1976–79 with that in 1974. However, dieldrin was detected at about 80% of the stations sampled in 1978–79, down from about 93% in 1976–77.

Chlordane, a long-lived multi-residue insecticide, replaced dieldrin as the most nearly ubiquitous of the cyclodiene compounds. *Cis*-chlordane, the most abundant component of the technical chlordane mixture, was detected at about 93% of the stations sampled in 1976–77 and at 94% in 1978–79 (Table 4). *Trans*-nonachlor, the second most abundant component, was found at 70% of the stations in 1976–77 and 93% in 1978–79. The remaining two components that we quantified directly, *trans*-chlordane and *cis*-nonachlor, as well as the chlordane metabolite oxychlordane, occured less frequently. Generally, chlordane residues were highest in Hawaii (station 100), in the Corn Belt, and in the Great Lakes. Where residues were significant, *cis*-chlordane was usually the most abundant component, followed by *trans*-nonachlor, *trans*-chlordane, *cis*-nonachlor, and oxychlordane. Although chlordane is no longer used in agriculture, it is still registered for use against a variety of pests in and around buildings (Anonymous 1981*a*). Consequently, chlordane residues are common in the sediments of streams that receive urban runoff (Truhlar and Reed 1976). Chlordane residues in NPMP samples collected in 1970–74 were not reported quantitatively due to analytical difficulties (Schmitt et al. 1981). For 1976–79, ANOVA indicated significant increases in mean residues of *cis*-chlordane, *cis*-nonachlor, and *trans*-nonachlor from 1976–77 to 1978–79 (Tables 5 and 6). However, significant station–year interaction for these three components suggests inconsistent temporal trends among the stations.

Heptachlor was formerly used as a soil insecticide (Eichers et al. 1978); it also is a minor component of technical chlordane (National Research Council Canada 1974). Since both heptachlor and chlordane were used on many of the same crops, residues of heptachlor (and its metabolite, heptachlor epoxide) and chlordane tend to occur together (Fig. 2). Average residues of heptachlor and heptachlor epoxide appear to be increasing slightly; ANOVA revealed a significant increase from 1976–77 to 1978–79 (Tables 6 and 7). (Results for years before 1976 were not sufficiently free of analytical interferences for statistical testing.) Percent occurrence remained essentially unchanged from 1976–77 through 1978–79; residues were detected at 53% of the stations in 1976–77 and at 55% in 1978–79 (Table 4). Heptachlor residues were highest at station 100 (Manoa Stream, Hawaii) in both 1976–77 and 1978–79, in association with high residues of chlordane and dieldrin (Table 8). Like dieldrin residues, heptachlor residues at station 76 declined markedly between 1970–74 and 1976–79.

Nationally, residues of endrin appear to have declined from 1976–77 through 1978–79 in terms of maximum concentration, mean concentration, and in percent occurrence (Tables 4–6). Comparisons with earlier years were clouded by differing analytical resolution, as reported for several other compounds (Schmitt et al. 1981). Most noticeable was the decline in endrin levels at the Cotton Belt stations, where residues have traditionally been the highest – stations 14, 15, 59, 80, and 81 and (as a result of chemical spills) station 76 (Appendix A). In fact, the highest endrin residue measured in fish from the 1978–79 collections did not come from the South; a bloater from northern Lake Michigan (station 105) contained 0.11 μg/g wet weight (0.82 μg/g lipid weight) endrin. Endrin was also present at greater than trace levels in most of the other samples collected from Lakes Michigan and Superior in both 1978–79 and in 1976–77. Because endrin occurred at trace levels in fish from many remote regions, it is likely that some of the endrin accumulating in Great Lakes fish has resulted from atmospheric transport. However, endrin was used for insecticidal purposes in the Great Lakes States as recently as 1976, when 5 million kg were applied to major field and forage crops (Eichers et al. 1978), and it is still used to protect orchards from rodent damage (Anonymous 1981*a*).

Toxaphene

Mean residues, as well as percent occurrence, of the heavily used insecticide toxaphene increased significantly (Tables 4–6). During a period when residue levels and occurrence outside the cotton-producing regions increased rapidly, toxaphene residues within the cotton-farming areas (e.g., the Southeast, mid-South, Texas, and California Central Valley) remained relatively stable (Table 7). Mean residue concentrations in fish from Lake Michigan reached levels as high as fish from some of the most heavily contaminated stations in the Cotton Belt (Table 8); lake trout from Lake Michigan typically contained 5–10 μg/g toxaphene (wet weight). Toxaphene residues in lake trout from Lake

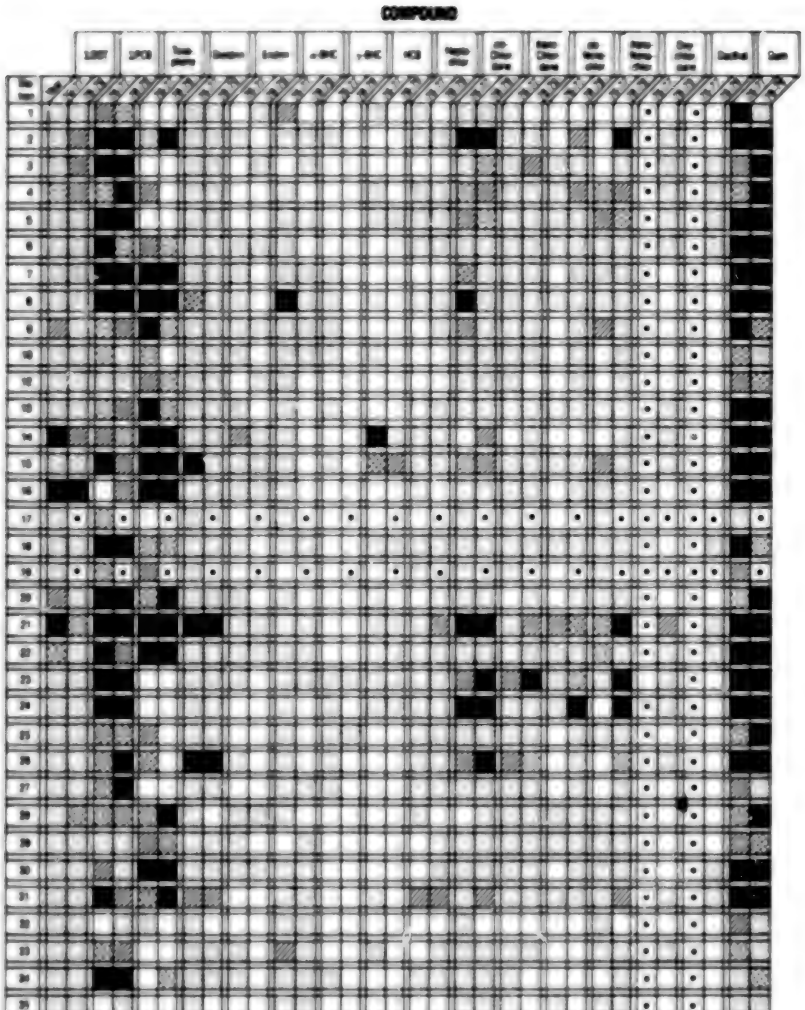
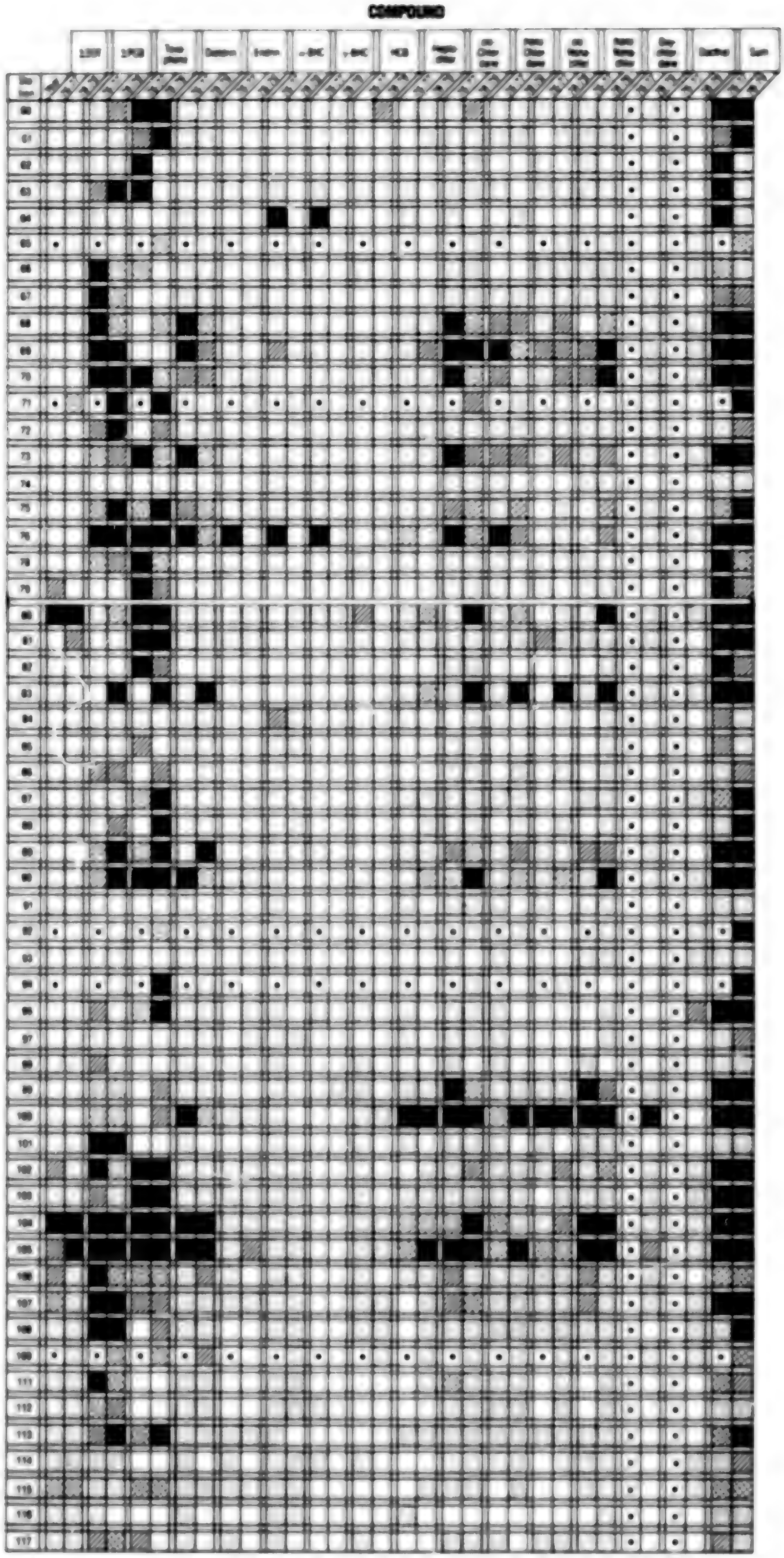


Fig. 4. Percentage of samples from National Pesticide Monitoring Program (NPMP) stations (station numbers in left-hand column) equaling or exceeding criteria of the National Academy of Science–National Academy of Engineers for minimum acceptable whole-body organochlorine residues, 1976–77 through 1978–79. ΣDDT = *p,p′*-homologs of DDE, DDD, and DDT. ΣPCB = Aroclors 1242, 1248, 1254, and 1260. Heptachlor includes heptachlor epoxide. Sum represents the total of toxaphene, dieldrin, endrin, BHC (α and γ-isomers), all chlordanes and dacthal.



LEGEND:

- ■ [illegible]
- ▨ [illegible]
- ▨ [illegible]
- ▨ None, but detectable residues present in at least one sample
- ☐ None, and no residue detected in any sample
- ⊡ No data

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Superior ranged from 2 to 7 µg/g wet weight, and the one lake trout sample collected from Lake Huron (station 106, 1977) contained 9.0 µg/g wet weight (Appendix A). Since comparatively little toxaphene has been used in the Great Lakes watershed, atmospheric transport from areas to the south and southwest offers the most cogent explanation for the accumulation of these residues in the upper lakes, as has been postulated for other contaminants (Eisenreich et al. 1981).

Until recently, toxaphene was the organochlorine insecticide used most extensively in American agriculture. Most of the toxaphene used in the United States was applied to cotton (Eichers et al. 1978). This complex, broad-spectrum mixture of compounds was also used against pests attacking fruits and vegetables, grains, turf, and ornamentals; to protect livestock from various ectoparasites; and to control certain weeds (Anonymous 1981*b*). However, as recently as 1976, 86% of the 14.1 million kg used annually on major field crops in the United States was applied to cotton (Eichers et al. 1978). Consequently, most use occurred in the Southeast, the mid-South, and the Southwest. Yet toxaphene residues have become virtually ubiquitous, and concentrations in fish from the Upper Great Lakes now exceed those from most major rivers draining the Nation's cotton-producing regions.

Dacthal

In a collaborative survey of residues in fish of the lower Rio Grande, Texas (White et al. 1983), unknown chromatographic peaks in the polar Florisil fraction were identified as dacthal (dimethyl tetrachloroterephthalate), a widely used, persistent, broad-spectrum herbicide (Anonymous 1981*a*). Subsequent quantitation of dacthal residues in all 1978–79 NPMP samples revealed measurable quantities (>0.01 µg/g) at 34% of the stations sampled. Residues were highest at stations 42 and 96, which are in the agricultural region of the lower Snake River valley in Washington and Idaho (Fig. 1; Appendix A).

Other Insecticides

Three compounds – HCB, γ-BHC (lindane), and α-BHC – all declined in mean and maximum concentration and in percent occurrence from 1976–77 through 1978–79 (Tables 4–7). Residues of α-BHC, a volatile isomer present in the BHC mixture that was used before 1974 primarily against cotton pests, did not exceed 0.05 µg/g at any station in 1978–79, and only trace amounts (0.02 µg/g) of lindane were found (Table 4). In 1976–77, residues of α-BHC exceeded 0.1 µg/g at stations 1, 8, 45, 54, 64, 69, 76, and 84, and lindane exceeded 0.1 µg/g at stations 64 and 76 (Fig. 1; Appendix A). Relatively high residues of α-BHC, as well as of other insecticides, at station 54 (Raritan River at Highland Falls, New Jersey) have recently been attributed to an abandoned chemical dump that was operated by a pesticide formulator (Larini 1980). However, the widespread distribution of α-BHC residues has probably resulted from atmospheric transport. Even though mixtures containing α-BHC are no longer used in most agricultural applications, significant (>0.5 ng/m^3) concentrations have recently been measured in air samples collected at diverse locations throughout the United States (U.S. Environmental Protection Agency 1980).

Hazards of Persistent Organochlorine Residues in Fish to Piscivorous Fishes and Wildlife

As previously reported (Schmitt et al. 1981), the whole-body residues measured in NPMP fish samples cannot be compared directly with standards determined for the protection of human health, which are based on residues in "edible portions" (usually skinless fillets). Whole-body samples include the viscera, with its higher lipid content, and therefore contain proportionately greater amounts of the lipophylic contaminants. However, the whole-fish residues are representative of the contaminant levels to which piscivorous fish and wildlife would be exposed, and can therefore be compared with the following criteria established by the National Academy of Science (NAS) and National Academy of Engineers (NAE) for the protection of fish-eating wildlife (NAS–NAE 1972): DDT and its metabolites, 1.0 µg/g (total); dieldrin, aldrin, endrin, BHC, heptachlor epoxide, chlordane, and toxaphene, 0.1 µg/g, either singly or in combination; and PCB's, 0.5 µg/g (total). We computed the percentage of the samples collected at each station each year that exceeded these criteria for the compounds measured, and graphically tabulated the results (Fig. 4). Dacthal residues had not been documented in fish at the time the criteria were established; however, since dacthal is a persistent, chlorinated hydrocarbon pesticide, we included it among the residues for which 0.1 µg/g is the criterion.

The NAS–NAE criteria were exceeded by 50% or more of the samples collected at 80 stations (76% of the total) in 1976–77 and at 81 stations (75%) of the stations in 1978–79 (Fig. 4). When the 78 stations with complete data for the period 1974 through 1979 were considered, the proportion of stations where 50% or more of the samples collected exceeded at least one of the criteria was nearly identical for all three collection periods: 1974, 68%; 1976–77, 67%; and 1978–79, 67%. As reported for 1970–74 (Schmitt et al. 1981), geographic trends remained fairly consistent from 1976–77 through 1978–79; stations generally exceeded the same criteria in each collection period (Fig. 4).

The potential threat that residues of persistent, toxic materials accumulated by fish may pose to piscivorous fish and wildlife has been further demonstrated by recent evidence (e.g., Aulerich and Ringer 1979; Young et al. 1979; Ohlendorf et al. 1981; Fry and Toone 1981). Yet, the criteria for whole-fish residues (NAS–NAE 1972), which are currently the only single reference for evaluating the possible biological significance of organochlorine residues in fish, were some 7 years old in 1979, and criteria were never established for residues of toxic metals. Conversely, the "action levels" for residues in edible portions, by which potential threats to human health are evaluated, are subject to intense scrutiny, and have been reviewed frequently and revised. Furthermore, significant improvements in residue analysis have been made since the NAS–NAE criteria were published, and many studies of the effects of organochlorine residues in the diets of predatory fish and wildlife have been conducted. Recent findings need to be considered and the NAS–NAE criteria reviewed for possible revision.

Summary and Conclusions

Results for 1976–79 continued to illustrate the effectiveness of the 1972 ban on the use of DDT in the United States. Residues of the most persistent DDT homolog (*p,p'*-DDE) declined after 1974, but appeared to stabilize by 1976–77. However, some of this apparent decrease in rate of disappearance may have been due to the counteracting effect of increases recorded for a few stations. Of the *p,p'*-DDT homologs, *p,p'*-DDE represented about 70% of the total between 1974 and 1978–79. Significant amounts of *p,p'*-DDT were found at only a few stations – which is further evidence of the effectiveness of the 1972 ban; more widespread use of DDT would have shown up as proportionately higher *p,p'*-DDT residues in fish from a greater number of stations. However, the ubiquity of DDT and its metabolites highlights the persistence and mobility of these toxic compounds. Furthermore, elevated DDT residues in fish attributable to past manufacturing and formulating operations may represent more of a threat to piscivorous fish and wildlife than previously envisioned. In addition to well-documented cases at Wheeler National Wildlife Refuge (O'Shea et al. 1980) and in the California Bight (Young et al. 1979; Fry and Toone 1981), our data also suggest industrial DDT contamination in the Tombigbee and Arkansas rivers. Elevated residues in migratory forage fish from the Lower Colorado River suggest that continued DDT use in Mexico could adversely affect wildlife in the Southwest.

Like DDT, PCB's have become widespread; residues were detected in fish from most of the stations sampled in 1978–79. Atmospheric transport and the movement of contaminated sediments offer reasonable explanations for the apparent dispersal of PCB's. Although residues at some of the most heavily contaminated stations appeared to be declining slightly and Aroclor 1242 was no longer found, the national mean total PCB level did not decrease substantially between 1974 and 1978–79. Furthermore, the continuing presence of residues resembling Aroclor 1248 suggested that relatively unaltered PCB's continued to enter the environment.

Mean dieldrin residues declined slightly after 1974, and detectable residues were found at fewer stations in 1978–79 than in 1976–77. Additionally, no measurable aldrin residues were found in 1978–79. Collectively, these results suggest an overall decline in the abundance of dieldrin in the environment after its use was curtailed in 1975 (Schnoor 1981). However, as of 1978–79, dieldrin residues had not declined in the Great Lakes, where they remained especially high in fish from Lake Michigan, and they were also high in fish from Hawaii.

Chlordane has become the most widespread cyclodiene insecticide. Chlordane residues in fish were highest in the Midwest and in Hawaii, where the insecticide was used most extensively.

A growing body of data indicates that toxaphene contamination, like that we reported for the Upper Great Lakes, is becoming widespread (Zell and Ballschmitter 1980). Toxaphene is highly toxic to most fishes (Johnson and Finley 1980) and may persist for years in some aquatic environments (Terriere et al. 1966).

Analytical resolution for identifying and quantifying organochlorine residues in fish has improved greatly in the last decade. Although comparatively few of the potentially dangerous substances in the environment can be so documented, several of the ones that have been successfully monitored are displaying similar behavior. Residues of persistent compounds no longer in use – DDT, PCB's, dieldrin, etc. – have declined in areas where they were most heavily used, but atmospheric transport and the movement of contaminated sediments have apparently made them more widespread. These compounds also appear to be accumulating in natural sinks, such as the Upper Great Lakes, which receive contaminants not only from within their own watersheds but from the atmosphere as well (Eisenreich et al. 1981). This is also true for toxaphene, which was used heavily in some areas of the United States more recently than were the other compounds.

The percentage of NPMP stations at which residues in whole fish exceeded NAS–NAE (1972) criteria for the protection of piscivorous fish and wildlife did not change between 1974 (Schmitt et al. 1981) and 1978–79.

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References

American Fisheries Society, Committee on Names of Fishes. 1980. A list of common and scientific names of fishes from the United States and Canada (4th edition). Am. Fish. Soc. Spec. Publ. 12. 174 pp.

Anonymous. 1981*a*. Farm chemicals handbook. Meister Publishing Co., Willoughby, Ohio.

Anonymous. 1981*b*. Introducing BCF chemicals. Farm Chem. 144:52–53.

Aulerich, R. J., and R. K. Ringer. 1979. Current status of PCB toxicity to mink and effect on their reproduction. Arch. Environ. Contam. Toxicol. 6:279–292.

Eichers, T. R., P. A. Andrilenas, and T. W. Anderson. 1978. Farmers' use of pesticides in 1976. U.S. Department of Agriculture, Economics, Statistics, and Cooperative Service. Agric. Econ. Rep. No. 41B.

Eisenreich, S. J., B. B. Looney, and J. D. Thornton. 1981. Airborne organic contaminants in the Great Lakes ecosystem. Environ. Sci. Technol. 15:30–38.

Fry, D. M., and C. K. Toone. 1981. DDT-induced feminization of gull embryos. Science 213:922–924.

Henderson, C., W. L. Johnson, and A. Inglis. 1969. Organochlorine insecticide residues in fish. Pestic. Monit. J. 3:145–171.

Henderson, C., A. Inglis, and W. L. Johnson. 1971. Organochlorine insecticide residues in fish, fall 1969. Pestic. Monit. J. 5:1–11.

Henderson, C., A. Inglis, and W. L. Johnson. 1972. Mercury residues in fish, 1969–1970. Pestic. Monit. J. 6:144–159.

Hesselberg, R. J., and L. W. Nicholson. 1981. Influence of PCBs in water on uptake and elimination of DDT by lake trout. J. Environ. Qual. 10:315–318.

International Joint Commission. 1979. Great Lakes water quality, 1978. Seventh Annual Report of the Surveillance Subcommittee to the Implementation Committee, Great Lakes Water Quality Board. Appendix B. Windsor, Ontario. 117 pp.

Johnson, W. L., and M. T. Finley. 1980. Handbook of acute toxicity of chemicals to fish and aquatic invertebrates. U.S. Fish and Wildlife Service, Resour. Publ. 137. 98 pp.

Kadoum, A. 1967. A rapid micromethod of sample cleanup for gas chromatographic analysis of insecticidal residues in plant, animal, soil, and surface and ground water extracts. Bull. Environ. Contam. Toxicol. 2:264–273.

Larini, R. 1980. Pesticide cleanup begins in Bound Brook. Star-Ledger (Newark, New Jersey), 5 December:28.

May, T. W., and G. L. McKinney. 1981. Cadmium, mercury, arsenic, and selenium concentrations in freshwater fish, 1976–1977 – National Pesticide Monitoring Program. Pestic. Monit. J. 15:14–38.

May, T. W., and D. L. Stalling. 1979. Double-reservoir rotoevaporation vessel for residue analysis. Anal. Chem. 51:169–170.

McMahon, B. M. 1968. Pesticide analytical manual. 2nd edition, Vol. I and II. U.S. Department of Health and Human Services, Food and Drug Administration, Washington, D.C.

National Academy of Sciences, National Academy of Engineers. 1972. Section III – Freshwater aquatic life and wildlife, water quality criteria. Ecological Research Series, EPA-R3-033, March 1973:106–113.

National Research Council Canada. 1974. Chlordane: Its effects on Canadian ecosystems and its chemistry. Associate Committee on Scientific Criteria for Environmental Quality, Subcommittee on Pesticides and Related Compounds. Subcommittee Report No. 2, NRCC No. 14094. 189 pp.

Ohlendorf, H. M., D. M. Swineford, and L. N. Locke. 1981. Organochlorine residues and mortality of herons. Pestic. Monit. J. 14:125–135.

O'Shea, T. J., W. J. Fleming III, and E. Cromartie. 1980. DDT contamination at Wheeler National Wildlife Refuge. Science 209:509–510.

Ribick, M. A., G. R. Dubay, D. L. Stalling, J. D. Petty, and C. J. Schmitt. 1982. Analysis of toxaphene in fish samples at part-per-billion levels. Environ. Sci. Technol. 16:310–318.

Ribick, M. A., L. M. Smith, G. R. Dubay, and D. L. Stalling. 1981. Applications and results of new analytical methods used in environmental monitoring. Pages 249–269 *in* D. R. Branson and K. Dixon, eds. Aquatic toxicology and hazard assessment, fourth conference, ASTM-STP 737. American Society for Testing and Materials, Philadelphia, Pa.

SAS Institute, Inc. 1979. SAS user's guide, 1979. Raleigh, N.C. 494 pp.

Schmitt, C. J. 1981. Analysis of variance as a method for examining contaminant residues in fish: National Pesticide Monitoring Program. Pages 270–298 *in* D. R. Branson and K. Dixon, eds. Aquatic toxicology and hazard assessment, fourth conference, ASTM-STP 737. American Society for Testing and Materials, Philadelphia, Pa.

Schmitt, C. J., J. L. Ludke, and D. Walsh. 1981. Organochlorine residues in fish, 1970–1974: National Pesticide Monitoring Program. Pestic. Monit. J. 14:136–206.

Schnoor, J. L. 1981. Fate and transport of dieldrin in Coralville Reservoir: Residues in fish and water following a pesticide ban. Science 211:840–842.

Snedecor, G. W., and W. G. Cochran. 1967. Statistical methods. Iowa State University Press, Ames. 593 pp.

Synder, D., and R. E. Reinert. 1971. Rapid separation of polychlorinated biphenyls from DDT and its analogs on silica gel. Bull. Environ. Contam. Toxicol. 6:385–390.

Sokal, R., and F. Rohlf. 1969. Biometry. W. H. Freeman and Co., San Francisco. 766 pp.

Stalling, D. L., J. N. Huckins, J. D. Petty, J. L. Johnson, and H. O. Sanders. 1979. An expanded approach to the study of PCB's and selected planar halogenated aromatic environmental pollutants. Ann. N. Y. Acad. Sci. 320:48–59.

Terriere, L. C., U. Kiigemagi, A. R. Gerlach, and R. L. Borovicka. 1966. The persistance of toxaphene in lake water and its uptake by aquatic plants and animals. J. Agric. Food Chem. 14:66–69.

Truhlar, J. F., and L. A. Reed. 1976. Occurrence of pesticide residues in streams draining different land-use areas in Pennsylvania, 1969–71. Pestic. Monit. J. 10:101–110.

U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances. 1980. National Air Monitoring Program, Suburban Air Monitoring Study. Pestic. Toxic Subst. Monit. Rep. 1:4.

Walsh, D., B. Berger, and J. Bean. 1977. Heavy metal residues in fish, 1971–1973. Pestic. Monit. J. 11:5–34.

White, D. H., C. A. Mitchell, H. D. Kennedy, A. J. Koynitsky, and M. Ribick. 1983. Elevated DDE and toxaphene residues in fishes and birds reflect local contamination in the lower Rio Grande Valley, Texas. Southwest. Nat. 28(3) In press.

Young, D. R., T. C. Heesen, G. N. Ersa, and E. E. Howard. 1979. DDE-contaminated fish off Los Angeles are suspected cause in deaths of captive marine birds. Bull. Environ. Contam. Toxicol. 24:84–590.

Zell, M., and K. Ballschmitter. 1980. Baseline studies of the global pollution. II. Global occurrence of hexachlorobenzene (HCB) and polychlorocamphenes (toxaphene) (PCC) in biological samples. Fresenius Z. Anal. Chem. 300:387–402.

Appendix A. Organochlorine residues and related data for NPMP freshwater fish, 1976-1979. All residues, ug/g (ppm) wet weight.

Station 1, Penobscot River at Old Town, Maine

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	White perch	24.9	0.2	7.9	-	0.04	0.01	0.01	0.0	0.0	0.20	0.2	0.00	0.08	0.00	-	0.03	0.01	0.00	0.01	0.01	0.00	0.00	0.00	-
76	White sucker	36.3	0.5	5.3	-	0.00	0.00	0.00	0.0	0.0	0.10	0.1	0.00	0.08	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Q/A re-analysis	-	-	3.9	-	0.01	0.03	0.00	-	-	0.23	-	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
76	White sucker	35.8	0.5	6.7	-	0.22	0.02	0.02	0.0	0.1	0.30	0.2	0.00	0.18	0.00	-	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-
78	Smallmouth bass	32.8	0.5	5.1	70.8	0.40	0.06	0.00	0.0	0.0	0.44	0.3	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.03	0.00	0.00	0.00	0.00
78	White sucker	34.8	0.5	3.0	77.1	0.01	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	White sucker	36.6	0.6	5.7	77.4	0.29	0.04	0.03	0.0	0.0	0.40	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.00
78	Q/A re-analysis	-	-	4.5	-	0.03	0.00	0.02	-	0.1	0.07	0.1	-	-	-	-	-	0.01	-	-	0.00	0.00	-	-	-

Station 2, Connecticut River at Windsor Locks, Conn.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	White catfish	29.5	0.3	6.5	-	0.26	0.08	0.04	0.0	1.8	2.40	1.2	0.30	0.01	0.00	-	0.00	0.03	0.01	0.01	0.13	0.04	0.00	0.00	-
76	Q/A re-analysis	-	-	8.0	-	0.13	0.14	0.00	-	-	3.60	-	0.00	0.04	0.00	-	0.00	0.04	0.00	0.01	0.09	0.12	0.00	0.00	-
76	White catfish	30.7	0.4	5.8	-	0.27	0.11	0.06	0.0	1.4	2.90	1.3	0.30	0.02	0.00	-	0.00	0.02	0.01	0.01	0.17	0.05	0.00	0.00	-
76	White perch	23.4	0.2	6.5	-	0.19	0.11	0.06	0.0	0.0	2.60	1.4	0.00	0.01	0.01	-	0.00	0.04	0.00	0.00	0.22	0.04	0.00	0.00	-
78	White catfish	42.2	1.0	7.9	74.2	0.72	0.16	0.09	0.0	3.8	3.40	5.0	0.60	0.02	0.00	0.00	0.00	0.05	0.00	0.06	0.16	0.05	0.09	0.19	0.02
78	White catfish	41.9	1.0	6.6	73.6	0.81	0.31	0.15	0.0	4.9	5.30	7.6	0.20	0.00	0.00	0.00	0.00	0.04	0.00	0.01	0.20	0.06	0.15	0.27	0.02
78	Yellow perch	20.3	0.1	5.4	69.6	0.38	0.16	0.10	0.0	2.6	1.50	1.8	0.30	0.00	0.00	0.00	0.00	0.05	0.00	0.01	0.10	0.05	0.08	0.20	0.02
78	Q/A re-analysis	-	-	4.7	-	0.17	0.00	0.05	-	2.2	0.52	0.8	-	-	-	-	-	0.04	-	-	0.17	0.09	-	-	-

Station 3, Hudson River at Poughkeepsie, N.Y.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Goldfish	28.7	0.5	10.5	-	0.97	0.00	0.00	0.0	51.9	16.40	2.3	0.00	0.00	0.00	-	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-
76	Goldfish	28.2	0.5	5.6	-	0.36	0.16	0.01	0.0	10.9	7.40	1.6	0.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.07	0.03	0.00	0.00	-
76	Largemouth bass	30.7	0.4	3.7	-	0.43	0.12	0.03	0.0	15.3	10.30	1.7	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	-
76	Q/A re-analysis	-	-	5.0	-	0.21	0.20	0.00	-	-	12.00	-	0.00	0.00	0.00	-	0.00	0.02	0.00	0.00	0.07	0.00	0.00	0.00	-
78	Goldfish	27.9	0.5	10.3	72.2	1.03	0.66	0.03	0.0	51.0	15.70	4.4	0.00	0.03	0.01	0.01	0.00	0.05	0.00	0.00	0.21	0.10	0.07	0.09	0.00
78	Goldfish	29.0	0.5	19.2	61.8	0.65	0.53	0.03	0.0	66.9	22.05	3.8	0.00	0.03	0.02	0.00	0.00	0.05	0.03	0.00	0.2[illegible]	0.09	0.06	0.08	0.00
78	Largemouth bass	28.2	0.4	5.3	71.9	0.19	0.17	0.02	0.0	6.7	4.30	1.6	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.05	0.01	0.02	0.05	0.01
78	Q/A re-analysis	-	-	5.2	-	0.30	0.13	0.03	-	12.1	1.68	0.9	-	-	-	-	-	0.03	-	-	0.00	0.00	-	-	-
78	Q/A re-analysis	-	-	5.0	-	0.31	0.13	0.04	-	11.7	1.67	0.8	-	-	-	-	-	0.03	-	-	0.00	0.00	-	-	-
78	Q/A re-analysis	-	-	4.8	-	0.28	0.12	0.03	-	10.8	1.75	0.7	-	-	-	-	-	0.02	-	-	0.00	0.00	-	-	-
78	Q/A re-analysis	-	-	5.0	-	0.32	0.00	0.00	-	12.8	2.13	0.9	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-

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Station 4, Delaware River at Trenton, N.J.--Yardley, Pa.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	White perch	17.8	0.1	7.3	65.9	3.06	0.50	0.17	0.0	1.0	1.80	2.8	0.20	0.03	0.00	-	0.01	0.04	0.00	0.06	0.14	0.05	0.02	0.14	-
77	White sucker	39.1	0.8	9.7	66.9	0.62	0.21	0.25	0.0	0.7	1.70	2.1	0.00	0.03	0.00	-	0.02	0.04	0.00	0.04	0.17	0.06	0.05	0.12	-
77	White sucker	38.6	0.7	9.4	72.4	0.02	0.00	0.00	0.0	0.0	0.00	0.1	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	White perch	18.5	0.1	6.8	72.0	4.74	0.66	0.22	-	0.0	2.90	3.7	0.00	0.00	0.00	0.05	0.00	0.04	0.00	0.04	0.52	0.05	0.16	0.17	0.02
79	White sucker	32.5	0.4	13.0	69.4	0.36	0.12	0.08	-	0.0	0.80	0.5	0.00	0.00	0.00	0.01	0.00	0.04	0.00	0.02	0.09	0.03	0.04	0.05	0.01
79	White sucker	36.3	0.5	10.7	70.2	0.58	0.14	0.09	-	1.1	1.10	0.6	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.04	0.01	0.04	0.05	0.08	0.01

Station 5, Susqehannah River at Conowingo Dam, Md.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	42.2	0.9	4.3	69.9	0.30	0.16	0.01	0.0	0.5	0.80	1.7	0.00	0.01	0.00	-	0.00	0.06	0.00	0.02	0.09	0.07	0.04	0.09	-
77	Common carp	42.4	0.9	4.9	72.6	0.28	0.20	0.00	0.0	0.0	0.00	1.8	0.00	0.00	0.00	-	0.00	0.06	0.00	0.00	0.13	0.08	0.03	0.10	-
77	Channel catfish	27.2	0.2	5.4	70.7	0.30	0.16	0.04	0.0	0.5	0.60	2.0	0.00	0.01	0.00	-	0.00	0.05	0.00	0.00	0.08	0.04	0.03	0.08	-
77	White perch	16.0	0.0	5.0	71.3	0.20	0.09	0.05	0.0	0.3	0.50	1.4	0.00	0.00	0.00	-	0.00	0.07	0.00	0.00	0.07	0.02	0.03	0.07	-
79	Common carp	32.8	0.9	8.2	73.9	0.28	0.15	0.01	-	0.0	1.00	1.4	0.00	0.01	0.00	0.02	0.01	0.05	0.00	0.02	0.14	0.05	0.05	0.10	0.01
79	Common carp	42.9	1.0	2.6	79.0	0.15	0.08	0.00	-	0.0	0.80	0.0	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.06	0.03	0.02	0.04	0.00
79	White perch	19.3	0.1	7.3	71.3	0.20	0.12	0.04	-	0.0	0.80	1.2	0.00	0.00	0.00	0.02	0.02	0.05	0.01	0.04	0.16	0.04	0.03	0.10	0.01

Station 6, Potomac River at Little Falls, Md.--McLean, Va.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	48.3	1.8	12.4	66.0	0.20	0.09	0.00	0.0	0.0	0.30	0.5	0.00	0.00	0.00	-	0.00	0.02	0.00	0.01	0.04	0.01	0.01	0.03	-
77	Common carp	44.4	1.3	14.4	62.4	0.19	0.09	0.00	0.0	0.0	0.40	0.4	0.00	0.01	0.00	-	0.00	0.03	0.01	0.00	0.01	0.02	0.01	0.03	-
77	Largemouth bass	31.0	0.5	7.4	69.8	0.18	0.07	0.00	0.0	0.0	0.40	0.4	0.20	0.00	0.00	-	0.00	0.02	0.00	0.00	0.03	0.00	0.02	0.04	-
79	Common carp	47.5	1.4	8.8	71.8	0.24	0.11	0.00	-	0.0	0.10	0.4	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.09	0.04	0.03	0.05	0.01
79	Common carp	43.2	1.1	15.4	65.6	0.22	0.14	0.02	-	0.0	0.60	0.4	0.56	0.00	0.00	0.01	0.00	0.04	0.02	0.02	0.08	0.03	0.02	0.05	0.01
79	Smallmouth bass	25.4	0.2	3.9	74.8	0.21	0.06	0.02	-	0.0	0.40	0.5	0.40	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.04	0.01	0.02	0.04	0.01

Station 7, Roanoke River at Roanoke Rapids, N.C.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	White catfish	28.2	0.2	4.1	-	0.49	0.19	0.05	0.0	0.0	3.70	0.4	0.90	0.04	0.02	-	0.00	0.05	0.01	0.00	0.09	0.03	0.00	0.00	-
76	Q/A re-analysis	-	-	9.1	-	0.64	0.20	0.00	-	-	1.30	-	0.00	0.04	0.00	-	0.00	0.03	0.00	0.00	0.07	0.00	0.00	0.00	-
76	White catfish	31.0	0.4	5.5	-	0.42	0.26	0.04	0.0	0.1	0.50	0.3	0.80	0.03	0.02	-	0.00	0.02	0.01	0.00	0.13	0.01	0.00	0.03	-
78	White catfish	37.8	0.7	5.9	-	0.35	0.19	0.09	0.0	0.5	0.50	0.3	0.90	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.05	0.01	0.04	0.05	0.00
78	Q/A re-analysis	-	-	5.5	-	0.36	0.14	0.03	-	0.5	0.18	0.1	-	-	-	-	-	0.01	-	-	0.00	0.00	-	-	-
78	White catfish	32.3	0.3	2.2	76.1	0.30	0.09	0.01	0.0	0.3	0.42	0.2	0.30	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.02	0.03	0.00

Station 8, Cape Fear River at Elizabethtown, N.C.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Gizzard shad	34.8	0.5	10.5	-	0.26	0.20	0.04	0.0	0.2	0.60	0.6	0.10	0.30	0.01	-	0.01	0.12	0.01	0.02	0.11	0.06	0.02	0.0	-
76	Gizzard shad	33.8	0.5	9.4	-	0.26	0.19	0.03	0.0	0.1	0.30	0.5	0.50	0.29	0.01	-	0.00	0.09	0.01	0.01	0.10	0.05	0.00	0.0	-
78	Spotted sucker	41.4	0.9	5.8	71.8	0.13	0.14	0.03	0.0	0.1	0.31	0.3	0.20	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.07	0.03	0.03	0.01	0.00
78	Spotted sucker	40.6	0.9	4.5	71.5	0.14	0.13	0.03	0.0	0.1	0.30	0.2	0.30	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.06	0.03	0.03	0.05	0.00

Station 9, Cooper River at Lake Moultrie, Monck's Corner, S.C.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodie Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Channel catfish	33.8	0.4	7.9	-	0.27	0.04	0.00	0.0	0.0	0.50	0.3	1.20	0.01	0.01	-	0.00	0.03	0.01	0.00	0.02	0.01	0.00	0.00	-
76	Channel catfish	35.3	0.4	7.0	-	0.22	0.07	0.02	0.0	0.0	0.20	0.2	1.30	0.03	0.00	-	0.00	0.05	0.00	0.00	0.03	0.01	0.00	0.03	-
76	Striped bass	66.0	3.3	7.7	-	2.30	0.41	0.62	0.0	0.0	3.30	2.3	3.30	0.05	0.00	-	0.00	0.03	0.01	0.00	0.11	0.00	0.00	0.16	-
78	Channel catfish	41.4	0.6	4.0	74.5	0.07	0.03	0.00	0.0	0.0	0.20	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
78	Channel catfish	37.1	0.5	6.6	69.1	0.21	0.10	0.00	0.0	0.0	0.13	0.4	0.40	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.03	0.01	0.02	0.02	0.00
78	Striped bass	41.4	0.9	13.8	-	0.18	0.11	0.00	0.0	0.1	0.20	0.2	1.20	0.01	0.00	0.00	0.00	0.02	0.01	0.01	0.04	0.01	0.03	0.02	0.00

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Station 10, Savannah River at Savannah, Ga.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Channel catfish	38.4	0.6	6.6	-	0.06	0.01	0.01	0.0	0.0	0.30	0.3	0.50	0.03	0.01	-	0.03	0.00	0.00	0.00	0.02	0.01	0.00	0.00	-
76	Largemouth bass	27.7	0.4	5.9	-	0.03	0.01	0.00	0.0	0.0	0.20	0.2	0.00	0.01	0.01	-	0.00	0.03	0.01	0.00	0.01	0.01	0.00	0.00	-
76	White catfish	35.1	0.7	7.6	-	0.07	0.01	0.01	0.0	0.0	0.30	0.3	0.80	0.03	0.00	-	0.03	0.03	0.01	0.00	0.03	0.01	0.00	0.00	-
78	Channel catfish	27.9	0.2	2.9	77.5	0.04	0.01	0.00	0.0	0.0	0.06	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Largemouth bass	32.0	0.5	4.1	-	0.05	0.03	0.00	0.0	0.0	0.10	0.2	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.02	0.00
78	White catfish	32.3	0.5	4.7	75.8	0.03	0.01	0.00	0.0	0.0	0.07	0.1	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00

Station 12, St. Lucie Canal at Indiantown, Fla.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Channel catfish	50.3	1.4	4.0	-	0.08	0.04	0.00	0.0	0.0	0.20	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.02	0.01	0.00	0.00	-
76	Largemouth bass	38.9	1.0	4.2	-	0.09	0.05	0.01	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.02	0.00	0.00	0.01	0.01	0.00	0.00	-
76	White catfish	34.0	0.5	6.8	-	0.14	0.14	0.00	0.0	0.2	0.00	0.0	0.70	0.01	0.00	-	0.00	0.02	0.00	0.00	0.02	0.02	0.00	0.00	-
76	Q/A re-analysis	-	-	8.6	-	0.19	0.18	0.00	-	-	0.16	-	0.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.12	0.00	0.00	0.00	-
78	Largemouth bass	29.5	0.3	3.8	71.7	0.09	0.05	0.01	0.0	0.1	0.30	0.1	0.20	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.02	0.00
78	White catfish	29.7	0.5	7.8	70.7	0.15	0.11	0.00	0.0	0.0	0.10	0.0	0.30	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.02	0.01	0.00
78	Q/A re-analysis	-	-	6.6	-	0.18	0.08	0.00	-	0.0	0.00	0.0	-	-	-	-		0.01	-	-	0.00	0.00	-	-	-
78	Q/A re-analysis	-	-	6.6	-	0.18	0.07	0.00	-	0.0	0.00	0.0	-	-	-	-	-	0.01	-	-	0.00	0.00	-	-	-
78	White catfish	30.7	0.5	6.1	71.0	0.07	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 13, Apalachicola River at J. Woodruff Dam, Fla.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Largemouth bass	35.8	0.7	8.6	68.4	0.69	0.13	0.00	0.0	0.0	0.20	0.6	2.30	0.00	0.00	-	0.00	0.01	0.01	0.01	0.07	0.01	0.03	0.05	-
77	Spotted sucker	44.4	1.1	6.7	70.1	0.25	0.07	0.00	0.0	0.0	0.20	0.2	1.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.05	0.02	0.01	0.03	-
77	Spotted sucker	46.7	1.3	19.5	67.9	0.41	0.11	0.03	0.0	0.0	0.40	0.2	1.50	0.01	0.01	-	0.00	0.02	0.00	0.01	0.08	0.04	0.02	0.06	-
79	Largemouth bass	38.4	0.9	5.9	71.6	0.47	0.16	0.00	-	0.0	0.40	0.5	1.10	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.06	0.01	0.03	0.04	0.01
79	Spotted sucker	47.2	1.3	5.0	75.3	0.13	0.05	0.00	-	0.0	0.10	0.1	0.50	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.01	0.02	0.01	0.00
79	Spotted sucker	45.7	1.1	3.7	74.5	0.17	0.06	0.05	-	0.0	0.20	0.1	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.03	0.01	0.04	0.02	0.00

Station 14, Tombigbee River at McIntosh, Ala.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Freshwater drum	29.7	0.4	10.0	74.1	1.06	0.20	0.21	0.0	0.0	0.30	0.2	1.50	0.02	0.00	-	0.60	0.01	0.04	0.00	0.00	0.00	0.00	0.00	-
77	Mixed species	35.3	1.0	10.9	69.0	0.81	0.18	0.38	0.0	0.0	0.90	0.3	2.70	0.05	0.00	-	0.70	0.01	0.40	0.00	0.00	0.00	0.00	0.00	-
79	Smallmouth buffalo	-	-	10.2	68.6	4.43	1.10	1.95	-	0.0	1.30	0.2	0.70	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
79	Smallmouth buffalo	-	-	10.4	69.6	0.50	0.20	0.16	-	0.0	1.00	0.3	1.30	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.34	0.03	0.00	0.03	0.01
79	White crappie	-	-	1.4	75.0	0.21	0.04	0.02	-	0.0	0.40	0.1	0.10	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00

Station 15, Mississippi River at Luling, La.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Freshwater drum	33.0	0.5	12.8	64.8	0.24	0.19	0.08	0.0	0.0	0.20	0.9	2.20	0.09	0.02	-	0.10	0.19	0.07	0.06	0.12	0.09	0.03	0.11	-
77	Freshwater drum	35.8	0.7	6.7	69.0	0.12	0.14	0.06	0.0	0.0	0.00	0.7	0.80	0.04	0.01	-	0.08	0.11	0.06	0.02	0.05	0.04	0.01	0.07	-
77	Freshwater drum	36.3	0.7	10.8	67.1	0.17	0.16	0.06	0.0	0.0	0.30	0.7	2.10	0.08	0.02	-	0.22	0.13	0.09	0.04	0.10	0.07	0.03	0.09	-
77	Q/A re-analysis	-	-	8.5	-	0.13	0.05	0.16	-	-	0.72	-	0.00	0.00	0.00	-	0.00	0.13	0.05	0.02	0.06	0.05	0.00	0.00	-
79	Common carp	32.3	0.6	12.1	71.2	0.06	0.12	0.00	-	0.0	0.20	0.2	0.40	0.00	0.00	0.00	0.09	0.08	0.01	0.02	0.05	0.06	0.01	0.00	0.00
79	Q/A re-analysis	-	-	12.8	-	0.04	0.12	0.00	-	0.6	0.12	0.1	-	-	-	-	-	0.07	-	-	0.08	0.04	-	-	-
79	Common carp	31.7	0.5	13.9	69.7	0.07	0.02	0.00	-	0.0	0.20	0.2	0.50	0.00	0.00	0.00	0.11	0.09	0.02	0.02	0.07	0.07	0.01	0.00	0.00
79	Largemouth bass	31.0	0.5	2.6	75.0	0.14	0.08	0.04	-	0.0	0.30	0.3	0.50	0.00	0.00	0.00	0.01	0.03	0.00	0.01	0.04	0.01	0.02	0.04	0.01

Station 16, Rio Grande at Mission, Tex.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Channel catfish	32.0	0.3	2.5	-	1.70	0.05	0.03	0.0	0.0	0.00	0.0	0.30	0.01	0.00	-	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	-
76	Gizzard shad	29.5	0.3	1.9	-	1.60	0.06	0.06	0.0	0.0	0.00	0.0	0.70	0.00	0.00	-	0.00	0.02	0.00	0.00	0.02	0.01	0.00	0.0	-
76	Gizzard shad	30.0	0.2	1.0	-	1.70	0.06	0.08	0.0	0.0	0.00	0.0	0.50	0.01	0.00	-	0.00	0.01	0.00	0.02	0.04	0.02	0.00	0.0	-
78	Gizzard shad	24.6	0.1	3.3	-	2.54	0.24	0.07	0.0	0.0	0.69	0.3	0.52	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.09	0.05	0.03	0.0	0.00
78	Gizzard shad	24.6	0.1	3.4	-	1.89	0.17	0.08	0.0	0.0	0.00	0.0	0.32	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.02	0.00	0.0	0.00
78	Blue catfish	35.1	0.4	2.7	-	2.53	0.15	0.12	0.0	0.0	0.00	0.0	1.37	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.04	0.01	0.01	0.00	0.00

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Station 17, Genessee River at Scottsville, N.Y.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	40.4	1.0	5.2	71.5	0.11	0.08	0.00	0.0	1.0	1.10	0.6	0.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.03	0.02	0.00	0.02	-
77	Common carp	39.4	1.0	8.4	68.2	0.11	0.09	0.00	0.0	0.8	1.00	0.5	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.02	0.01	0.00	0.01	-
77	Pumpkinseed	13.0	0.1	1.7	64.4	0.03	0.01	0.01	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	-

Station 18, Lake Ontario at Port Ontario, N.Y.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Channel catfish	35.8	0.4	11.8	67.7	0.49	0.19	0.02	0.0	1.1	2.00	1.3	0.00	0.01	0.00	-	0.03	0.03	0.01	0.00	0.05	0.00	0.01	0.08	-
77	Channel catfish	36.1	0.4	11.6	67.9	0.40	0.15	0.03	0.0	1.7	2.50	1.2	0.20	0.01	0.00	-	0.02	0.04	0.01	0.00	0.04	0.00	0.01	0.07	-
77	Q/A re-analysis	-	-	11.0	-	0.49	0.14	0.00	-	-	3.30	-	0.00	0.00	0.00	-	0.00	0.03	0.01	0.01	0.00	0.06	0.00	0.06	-
77	Rock bass	21.8	0.2	4.3	72.5	0.30	0.06	0.04	0.0	0.5	1.50	1.0	0.10	0.01	0.00	-	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.04	-
79	Rock bass	22.1	0.2	6.8	72.7	0.17	0.05	0.05	-	0.0	0.60	0.9	0.20	0.01	0.00	0.00	0.01	0.03	0.00	0.00	0.02	0.00	0.02	0.03	0.00
79	Yellow perch	20.8	0.1	4.0	75.2	0.08	0.02	0.03	-	0.0	0.40	0.3	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.02	0.00
79	Yellow perch	20.8	0.1	4.9	74.4	0.11	0.03	0.04	-	0.0	0.60	0.4	0.30	0.01	0.00	0.01	0.01	0.02	0.00	0.00	0.02	0.02	0.01	0.02	0.00
79	Q/A re-analysis	-	-	4.9	-	0.11	0.00	0.02	-	0.5	0.21	0.2	-	-	-	-	-	0.02	-	-	0.00	0.00	-	-	-

Station 19, Lake Erie at Erie, Pa.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	White sucker	28.7	0.3	4.1	77.7	0.02	0.01	0.00	0.0	0.0	0.40	0.0	0.00	0.00	0.00	-	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-
77	White sucker	29.0	0.3	4.4	74.4	0.03	0.02	0.01	0.0	0.0	0.50	0.0	0.00	0.00	0.00	-	0.00	0.02	0.00	0.01	0.02	0.01	0.00	0.01	-
77	Yellow perch	21.8	0.2	4.6	73.6	0.05	0.04	0.02	0.0	0.0	0.60	0.0	0.10	0.00	0.00	-	0.00	0.02	0.00	0.00	0.02	0.01	0.00	0.02	-

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Station 20, Lake Huron (Saginaw Bay) at Bay Port, Mich.

		Mean	Mean		Mois-	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	TL (cm)	Wt (kg)	Lipid (pct)	ture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxa-phene	a-BHC	g-BHC	Dac-thal	HCB	Diel-drin	En-drin	Hepta-chlor	cis Chlor-dane	trans Chlor-dane	cis Nona-chlor	trans Nona-chlor	Oxy-chlor-dane
77	Common carp	47.5	1.7	9.6	66.3	0.20	0.06	0.00	0.0	0.1	1.00	0.7	0.00	0.01	0.00	-	0.00	0.02	0.02	0.00	0.02	0.00	0.00	0.01	-
77	Common carp	43.4	1.3	11.5	65.4	0.90	0.25	0.00	0.0	1.5	1.60	0.7	0.00	0.02	0.00	-	0.01	0.02	0.00	0.00	0.03	0.00	0.00	0.01	-
77	Yellow perch	19.3	0.1	4.0	76.7	0.19	0.05	0.03	0.0	0.6	1.00	0.7	0.40	0.01	0.00	-	0.01	0.01	0.00	0.00	0.02	0.00	0.00	0.03	-
77	Yellow perch	19.0	0.1	3.3	77.6	0.17	0.04	0.03	0.0	0.6	0.90	0.6	0.30	0.01	0.00	-	0.03	0.01	0.00	0.60	0.01	0.00	0.00	0.02	-
79	Common carp	47.0	1.5	12.5	67.1	0.58	0.14	0.00	-	0.0	4.80	2.0	0.31	0.01	0.00	0.00	0.00	0.02	0.00	0.04	0.04	0.01	0.01	0.03	0.00
79	Common carp	43.4	1.1	8.8	70.7	0.48	0.13	0.30	-	0.0	2.60	1.1	3.70	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.04	0.01	0.00	0.02	0.00
79	Yellow perch	18.0	0.0	2.4	77.6	0.12	0.03	0.00	-	0.0	0.60	0.7	0.20	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00

Station 21, Lake Michigan at Sheboygan, Wis.

		Mean	Mean		Mois-	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	TL (cm)	Wt (kg)	Lipid (pct)	ture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxa-phene	a-BHC	g-BHC	Dac-thal	HCB	Diel-drin	En-drin	Hepta-chlor	cis Chlor-dane	trans Chlor-dane	cis Nona-chlor	trans Nona-chlor	Oxy-chlor-dane
77	Bloater	25.7	0.2	24.6	59.1	0.62	0.15	0.29	0.0	0.4	1.10	0.7	3.50	0.03	0.00	-	0.02	0.37	0.05	0.07	0.11	0.06	0.03	0.09	-
77	Bloater	25.4	0.3	25.8	62.1	0.82	0.16	0.20	0.0	0.4	1.20	1.0	3.30	0.03	0.00	-	0.02	0.37	0.05	0.06	0.12	0.08	0.02	0.08	-
77	Lake trout	69.8	3.0	15.3	57.2	5.21	0.38	0.64	0.0	2.5	5.50	5.6	7.80	0.02	0.00	-	0.02	0.30	0.03	0.00	0.23	0.06	0.09	0.23	-
77	Q/A re-analysis	-	-	12.0	-	6.40	0.00	0.00	-	-	8.70	-	3.50	0.00	0.00	-	0.00	0.30	0.00	0.00	0.11	0.17	0.00	0.00	-
77	Lake trout	60.5	2.0	20.6	63.8	3.03	0.52	1.00	0.0	1.5	2.50	2.9	6.40	0.02	0.00	-	0.02	0.22	0.05	0.03	0.22	0.06	0.22	0.31	-
79	Bloater	28.4	0.2	24.7	60.3	0.69	0.16	0.31	-	1.4	1.50	0.6	2.70	0.02	0.00	0.03	0.01	0.29	0.02	0.07	0.11	0.04	0.06	0.12	0.07
79	Bloater	26.9	0.3	26.1	59.4	0.58	0.18	0.12	-	0.0	1.30	0.4	2.30	0.03	0.00	[illegible]	[illegible]	0.27	0.02	0.08	0.12	0.04	0.15	0.10	0.06
79	Q/A re-analysis	-	-	25.3	-	0.78	0.00	0.16	-	1.0	0.82	0.3	-	-	-	-	-	0.25	-	-	0.00	0.00	-	-	-
79	Q/A re-analysis	-	-	25.5	59.0	0.96	0.00	0.00	-	-	2.06	0.0	0.00	0.03	0.00	-	0.00	0.32	0.00	0.14	0.00	0.00	0.00	0.34	-
79	Lake trout	61.2	2.2	17.8	65.9	2.23	0.54	0.00	-	0.0	2.50	2.8	7.10	0.01	0.00	0.04	0.00	0.50	0.03	0.10	0.30	0.10	0.46	0.35	0.10
79	Q/A re-analysis	-	-	19.2	-	1.62	0.18	0.32	-	3.0	2.14	1.3	-	-	-	-	-	0.30	-	-	0.00	0.00	-	-	-

Station 22, Lake Superior at Bayfield, Wis.

		Mean	Mean		Mois-	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	TL (cm)	Wt (kg)	Lipid (pct)	ture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxa-phene	a-BHC	g-BHC	Dac-thal	HCB	Diel-drin	En-drin	Hepta-chlor	cis Chlor-dane	trans Chlor-dane	cis Nona-chlor	trans Nona-chlor	Oxy-chlor-dane
77	Lake trout	62.7	2.3	26.4	65.0	1.16	0.20	0.35	0.0	0.0	0.00	1.5	5.20	0.03	0.00	-	0.02	0.08	0.01	0.01	0.05	0.01	0.04	0.10	-
77	Q/A re-analysis	-	-	13.0	-	0.71	0.11	0.34	-	-	0.68	-	0.00	0.00	0.00	-	0.00	0.04	0.00	0.01	0.00	0.05	0.00	0.00	-
77	Lake whitefish	51.6	1.3	10.6	62.1	0.22	0.06	0.10	0.0	0.0	0.10	0.5	2.30	0.02	0.00	-	0.01	0.07	0.04	0.34	0.03	0.02	0.01	0.03	-
79	Lake trout	63.0	2,1	13.7	69.7	0.26	0.07	0.06	-	0.0	0.70	0.4	2.20	0.01	0.00	0.01	0.01	0.05	0.01	0.01	0.04	0.01	0.05	0.05	0.02
79	Q/A re-analysis	-	-	15.7	-	0.31	0.00	0.00	-	0.3	0.14	0.4	-	-	-	-	-	0.06	-	-	0.00	0.00	-	-	-
79	Lake whitefish	33.5	0.3	4.7	75.9	0.08	0.03	0.00	-	0.0	0.10	0.1	0.90	0.01	0.00	0.00	0.00	0.03	0.01	0.01	0.01	0.00	0.01	0.01	0.00
79	Q/A re-analysis	-	-	4.9	-	0.05	0.00	0.00	-	0.1	0.00	0.1	-	-	-	-	-	0.03	-	-	0.00	0.00	-	-	-
79	Lake whitefish	32.8	0.3	6.1	74.1	0.03	0.02	0.02	-	0.0	0.10	0.1	0.60	0.01	0.00	0.00	0.00	0.02	0.05	0.01	0.01	0.00	0.01	0.01	0.01

Station 23, Kanawha River at Winfield, W. Va.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Black crappie	16.0	0.0	2.6	-	0.03	0.01	0.01	0.0	0.1	0.30	0.4	0.00	0.01	0.01	-	0.03	0.01	0.00	0.01	0.04	0.02	0.01	0.03	-
76	Brown bullhead	24.4	0.2	9.2	-	0.04	0.02	0.00	0.0	0.2	0.10	0.7	0.00	0.03	0.01	-	0.05	0.01	0.00	0.02	0.07	0.06	0.01	0.03	-
76	Common carp	37.6	0.6	9.6	-	0.06	0.05	0.00	0.0	0.3	1.50	0.6	0.00	0.03	0.00	-	0.07	0.04	0.01	0.00	0.22	0.10	0.00	0.00	-
76	Q/A re-analysis	-	-	12.0	-	0.00	0.00	0.00	-	-	8.00	-	0.00	0.03	0.00	-	0.00	0.03	0.01	0.01	0.07	0.08	0.00	0.00	-
78	Channel catfish	36.3	0.5	6.9	70.3	0.14	0.07	0.02	0.0	1.0	1.20	2.9	0.00	0.03	0.01	0.00	0.02	0.03	0.00	0.03	0.30	0.18	0.12	0.20	0.02
78	Channel catfish	37.8	0.5	13.9	67.2	0.10	0.01	0.01	0.0	0.7	1.19	2.1	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.03	0.22	0.15	0.08	0.14	0.02
78	Q/A re-analysis	-	-	12.5	-	0.07	0.07	0.00	-	0.8	0.67	1.3	-	-	-	-	-	0.05	-	-	0.31	0.19	-	-	-
78	Sauger	36.1	0.4	9.2	70.7	0.10	0.07	0.04	0.0	0.8	1.50	1.8	0.00	0.00	0.00	0.00	0.03	0.05	0.00	0.06	0.32	0.16	0.12	0.20	0.02

Station 24, Ohio River at Marietta, Ohio--Williamstown, W. Va.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				-Miscellaneous Perticides-					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	43.7	1.3	12.0	-	0.1[illegible]	0.07	0.02	0.0	0.0	2.10	0.8	0.00	0.01	0.01	-	0.03	0.02	0.00	0.01	0.21	0.08	0.03	0.00	-
76	Sauger	35.3	0.5	12.5	-	0.23	0.08	0.04	0.0	0.0	2.40	2.8	0.00	0.01	0.01	-	0.04	0.04	0.00	0.00	0.25	0.07	0.05	0.00	-
78	Channel catfish	30.5	0.1	7.8	72.2	0.22	0.18	0.12	0.0	1.4	3.12	2.2	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.02	0.15	0.06	0.13	0.15	0.01
78	Q/A re-analysis	-	-	7.2	-	0.24	0.19	0.00	-	0.8	1.35	1.5	-	-	-	-	-	0.11	-	-	0.20	0.12	-	-	-
78	Sauger	31.7	0.5	5.6	70.1	0.16	0.06	0.04	0.0	1.5	2.22	2.4	0.00	0.00	0.00	0.00	0.03	0.04	0.00	0.04	0.31	0.09	0.12	0.23	0.00

Station 25, Cumberland River at Clarksville, Tenn.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	34.0	0.5	4.5	-	0.30	0.10	0.01	0.0	0.0	1.50	0.7	0.30	0.03	0.00	-	0.00	0.02	0.00	0.00	0.04	0.02	0.00	0.03	-
76	Largemouth bass	24.9	0.2	3.3	-	0.08	0.03	0.01	0.0	0.1	0.40	0.2	0.00	0.01	0.01	-	0.00	0.03	0.00	0.01	0.04	0.01	0.00	0.03	-
76	Spotted sucker	31.0	0.4	0.8	-	0.04	0.01	0.00	0.0	0.0	0.10	0.2	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
78	Common carp	35.3	0.6	5.0	73.9	0.24	0.01	0.00	0.0	0.2	1.06	0.7	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.04	0.02	0.02	0.04	0.00
78	Common carp	39.4	0.8	4.0	74.0	0.29	0.07	0.00	0.0	0.3	1.40	1.4	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.02	0.03	0.04	0.00
78	White crappie	28.4	0.4	6.1	70.5	0.15	0.08	0.00	0.0	0.1	0.30	0.1	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.01	0.07	0.02	0.02	0.03	0.00

Station 26, Illinois River at Beardstown, Ill.

						-----p,p'-DDT Homologs-----			--------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					--------------Cyclodiene Insecticides--------------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Black crappie	20.8	0.1	1.8	-	0.02	0.03	0.01	0.0	0.0	0.30	0.2	0.00	0.01	0.01	-	0.00	0.12	0.01	0.01	0.07	0.03	0.00	0.00	-
76	Common carp	35.8	0.5	6.1	-	0.18	0.06	0.05	0.0	0.0	1.10	0.6	0.10	0.01	0.00	-	0.00	0.22	0.01	0.01	0.01	0.01	0.00	0.00	-
76	Common carp	36.1	0.6	8.5	-	0.15	0.10	0.01	0.0	0.0	1.10	0.5	0.20	0.03	0.00	-	0.00	0.34	0.00	0.00	0.31	0.22	0.00	0.00	-
78	Black crappie	26.4	0.3	6.0	69.9	0.08	0.06	0.00	0.0	0.4	0.36	0.3	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.05	0.12	0.08	0.05	0.07	0.01
78	Common carp	34.8	0.5	5.1	72.6	0.03	0.08	0.00	0.0	0.4	0.67	0.6	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.03	0.15	0.12	0.08	0.11	0.01
78	Common carp	37.8	0.8	6.7	73.1	0.14	0.09	0.00	0.0	0.5	0.81	0.3	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.04	0.17	0.15	0.08	0.11	0.01

Station 27, Mississippi River at Gutenburg, Iowa--Glen Haven, Wis.

						-----p,p'-DDT Homologs-----			--------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					--------------Cyclodiene Insecticides--------------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	50.5	1.6	5.6	-	0.05	0.03	0.02	0.0	0.0	1.00	0.2	0.00	0.01	0.01	-	0.00	0.02	0.00	0.00	0.02	0.02	0.00	0.00	-
76	Common carp	54.1	2.0	8.3	-	0.19	0.03	0.03	0.0	0.0	1.60	0.3	0.00	0.01	0.01	-	0.00	0.02	0.00	0.01	0.05	0.01	0.00	0.00	-
76	Largemouth bass	35.8	0.8	4.1	-	0.03	0.02	0.02	0.0	0.0	0.40	0.1	0.00	0.01	0.00	-	0.00	0.03	0.00	0.00	0.01	0.01	0.00	0.00	-
78	Common carp	43.4	1.1	9.0	68.8	0.05	0.03	0.00	0.0	0.0	0.60	0.2	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.03	0.01	0.01	0.01	0.00
78	Common carp	45.2	1.3	8.1	69.8	0.08	0.03	0.00	0.0	0.3	0.89	0.2	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.02	0.01	0.01	0.02	0.00
78	Largemouth bass	30.5	0.5	2.7	70.1	0.04	0.01	0.00	0.0	0.0	0.54	0.1	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.02	0.00

Station 28, Arkansas River at Pine Bluff, Ark.

						-----p,p'-DDT Homologs-----			--------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					--------------Cyclodiene Insecticides--------------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Bluegill	16.0	0.0	0.7	77.7	0.14	0.04	0.01	0.0	0.0	0.10	0.2	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Common carp	50.3	1.7	6.4	68.7	0.76	0.22	0.00	0.0	0.2	0.30	0.4	1.70	0.01	0.00	-	0.00	0.01	0.07	0.01	0.00	0.01	0.00	0.02	-
77	Q/A re-analysis	-	-	7.2	-	0.80	0.26	0.00	-	-	0.88	-	0.00	0.00	0.00	-	0.00	0.01	0.06	0.01	0.00	0.03	0.00	0.00	-
79	Bluegill	32.0	0.6	1.8	76.5	0.30	0.05	0.07	-	0.0	0.20	0.3	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00
79	Common carp	50.0	1.8	6.2	73.5	3.62	0.69	0.08	-	0.0	0.30	0.4	2.60	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.07	0.01	0.01	0.03	0.00
79	Q/A re-analysis	-	-	5.9	-	4.90	0.67	0.00	-	0.3	0.11	0.3	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-
79	Common carp	51.6	2.0	6.8	72.0	1.56	0.53	0.03	-	0.0	0.46	0.5	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.02	0.01	0.02	0.00

Station 29, Arkansas River at Keystone Reservoir, Okla.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	45.5	1.0	1.0	71.6	0.02	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Common carp	45.2	1.1	1.5	70.9	0.02	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	-
77	Largemouth bass	34.8	0.8	4.2	68.7	0.06	0.03	0.00	0.0	0.0	0.00	0.1	0.30	0.00	0.00	-	0.00	0.01	0.00	0.00	0.03	0.01	0.02	0.03	-
77	Q/A re-analysis	-	-	4.7	-	0.07	0.02	0.00	-	-	0.28	-	0.00	0.00	0.00	-	0.00	0.02	0.01	0.00	0.06	0.09	0.00	0.00	-
79	Common carp	40.6	0.8	3.7	77.1	0.09	0.04	0.00	-	0.0	0.20	0.3	0.20	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.04	0.02	0.02	0.03	0.00
79	Q/A re-analysis	-	-	3.7	-	0.07	0.02	0.00	-	0.2	0.04	0.2	-	-	-	-	-	0.00	-	-	0.05	0.01	-	-	-
79	Common carp	38.9	0.8	2.4	78.8	0.04	0.02	0.00	-	0.0	0.10	0.1	0.20	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.02	0.00
79	White bass	17.3	0.0	1.0	79.7	0.02	0.00	0.00	-	0.0	0.00	0.1	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00

Station 30, White River at De Valls Bluff, Ark.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Bigmouth buffalo	38.4	0.9	2.3	65.8	0.26	0.05	0.01	0.0	0.0	0.10	0.0	1.20	0.00	0.00	-	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	-
77	Bigmouth buffalo	39.4	0.9	5.6	72.2	0.43	0.11	0.08	0.0	0.0	0.30	0.4	1.50	0.01	0.00	-	0.00	0.01	0.04	0.00	0.04	0.02	0.00	0.03	-
77	White crappie	21.6	0.1	0.8	76.4	0.11	0.01	0.00	0.0	0.0	0.20	0.0	0.10	0.00	0.00	-	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Freshwater drum	32.5	0.4	9.2	70.7	0.23	0.11	0.22	-	0.0	0.10	0.1	1.80	0.01	0.00	0.00	0.00	0.04	0.02	0.01	0.04	0.01	0.00	0.03	0.00
79	Freshwater drum	34.0	0.5	10.3	70.3	0.39	0.17	0.15	-	0.0	0.20	0.1	2.30	0.01	0.00	0.01	0.00	0.04	0.02	0.01	0.03	0.01	0.02	0.03	0.00
79	Largemouth bass	38.4	1.0	5.0	72.4	0.22	0.05	0.06	-	0.0	0.20	0.0	0.40	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.03	0.01	0.01	0.02	0.00

Station 31, Missouri River at Nebraska City, Nebr.--Hamburg, Iowa

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	37.6	0.8	7.2	68.0	0.11	0.06	0.03	0.0	0.0	0.20	0.4	0.30	0.01	0.00	-	0.00	0.08	0.00	0.02	0.08	0.07	0.01	0.04	-
77	Q/A re-analysis	-	-	8.0	-	0.03	0.00	0.00	-	-	0.38	-	0.00	0.00	0.00	-	0.00	0.08	0.00	0.02	0.07	0.08	0.00	0.00	-
77	Common carp	35.9	0.8	6.2	69.1	0.10	0.05	0.01	0.0	0.0	0.00	0.5	0.00	0.00	0.00	-	0.00	0.08	0.00	0.02	0.06	0.05	0.01	0.04	-
77	Goldeye	31.7	0.3	12.3	60.4	0.16	0.07	0.06	0.0	0.3	0.60	0.7	0.40	0.01	0.00	-	0.01	0.15	0.00	0.10	0.00	[illegible]	0.04	0.05	-
79	Common carp	38.6	0.9	6.4	73.9	0.08	0.04	0.00	-	0.0	0.20	0.3	0.60	0.01	0.00	0.00	0.00	0.04	0.00	0.01	0.04	0.04	0.02	0.03	0.00
79	Q/A re-analysis	-	-	6.3	-	0.07	0.05	0.00	-	0.1	0.05	0.2	-	-	-	-	-	0.04	-	-	0.08	0.03	-	-	-
79	Common carp	43.7	1.3	5.7	75.5	0.08	0.03	0.00	-	0.0	0.00	0.4	0.10	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.04	0.03	0.01	0.03	0.00
79	Goldeye	35.3	0.5	16.6	64.4	0.28	0.05	0.06	-	0.0	0.40	0.6	0.40	0.02	0.00	0.01	0.00	0.63	0.00	0.15	0.13	0.01	0.07	0.12	0.07

BEST DOCUMENT AVAILABLE

Station 32, Missouri River at Garrison Dam, N. Dak.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Walleye	43.9	0.7	6.8	68.3	0.03	0.01	0.00	0.0	0.0	0.00	0.0	0.07	0.02	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	-
77	White sucker	36.1	0.5	2.1	71.7	0.00	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	White sucker	36.3	0.5	1.3	76.1	0.00	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Northern pike	43.4	0.5	1.5	78.5	0.00	0.01	0.00	-	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	Redhorse	41.7	0.7	4.6	75.0	0.02	0.01	0.00	-	0.0	0.10	0.0	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 33, Missouri River at Great Falls, Mont.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Goldeye	32.3	0.3	17.3	65.4	0.08	0.02	0.02	0.0	0.0	0.30	0.1	0.00	0.01	0.00	-	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	-
77	Longnose sucker	42.2	0.9	16.8	64.1	0.11	0.04	0.10	0.0	0.0	0.50	0.2	0.00	0.02	0.00	-	0.01	0.01	0.02	0.00	0.02	0.01	0.00	0.02	-
77	Redhorse	43.4	1.1	21.3	58.8	0.34	0.12	0.37	0.0	0.0	1.60	0.6	0.00	0.21	0.00	-	0.01	0.00	0.00	0.00	0.03	0.01	0.00	0.04	-
79	Brown trout	45.7	1.1	10.0	69.7	0.13	0.03	0.04	-	0.0	0.50	0.1	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.04	0.01
79	White sucker	31.0	0.3	5.0	77.5	0.03	0.01	0.01	-	0.0	0.20	0.0	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	White sucker	27.7	0.2	5.6	77.2	0.05	0.02	0.00	-	0.0	0.30	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00

Station 34, Red River of the North at Noyes, Minn.--Pembina, N. Dak.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Sauger	33.3	0.3	4.9	-	0.14	0.07	0.01	0.0	0.0	0.80	0.4	0.00	0.01	0.01	-	0.00	0.01	0.30	0.00	0.02	0.01	0.00	0.00	-
76	Sauger	31.5	0.2	5.0	-	0.08	0.03	0.01	0.0	0.0	0.40	0.2	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Q/A re-analysis	-	-	4.4	-	0.15	0.00	0.00	-	-	0.80	-	0.00	0.00	0.00	-	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.00	-
76	White sucker	35.3	0.5	6.1	-	0.04	0.04	0.02	0.0	0.0	0.40	0.2	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	-
78	Common carp	38.4	0.7	4.4	74.1	0.21	0.09	0.00	0.0	0.1	0.30	0.3	0.30	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.02	0.00
78	Common carp	36.3	0.6	4.2	71.4	0.25	0.09	0.00	0.0	0.1	0.15	0.4	0.42	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.32	0.00	0.00	0.02	0.00
78	Sauger	35.6	0.3	5.3	70.1	0.09	0.06	0.00	0.0	0.1	0.28	0.3	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00
78	Q/A re-analysis	-	-	4.8	-	0.08	0.03	0.00	-	0.0	0.13	0.2	-	-	-	-	-	0.01	-	-	0.00	0.00	-	-	-
78	Q/A re-analysis	-	-	4.6	-	0.08	0.04	0.00	-	0.0	0.09	0.2	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-

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Station 35. Green River at Vernal, Utah

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	34.5	0.6	3.2	-	0.03	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	-
76	Common carp	31.7	0.5	3.7	-	0.01	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
76	Channel catfish	31.7	0.2	1.7	-	0.01	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
78	Common carp	39.1	0.9	4.6	72.2	0.04	0.01	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
78	Common carp	33.8	0.5	4.1	74.8	0.03	0.01	0.00	0.0	0.0	0.09	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
78	Smallmouth bass	26.2	0.3	0.6	68.4	0.01	0.02	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00

Station 36. Colorado River at Imperial Reservoir, Ariz.--Calif.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	37.6	0.8	2.8	-	0.06	0.02	0.01	0.0	0.0	0.00	0.0	0.20	0.01	0.00	-	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	-
76	Channel catfish	42.7	0.6	3.3	-	0.04	0.01	0.01	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-
78	Common carp	45.0	1.3	7.7	70.1	0.26	0.07	0.00	0.0	0.0	0.09	0.0	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.01	0.00
78	Common carp	43.7	1.2	5.0	72.5	0.13	0.02	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
78	Largemouth bass	30.7	0.4	2.6	73.1	0.08	0.01	0.01	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00

Station 37. Truckee River at Fernley, Nev.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	48.9	1.4	6.8	-	0.16	0.08	0.00	0.0	0.2	0.71	0.9	0.00	0.05	0.00	-	0.00	0.03	0.01	0.00	0.11	0.05	0.04	0.11	-
77	Tahoe sucker	22.4	0.1	7.5	-	0.13	0.06	0.01	0.0	0.1	0.36	0.2	0.00	0.05	0.01	-	0.00	0.02	0.02	0.01	0.08	0.04	0.03	0.07	-
77	Tahoe sucker	22.1	0.1	7.1	-	0.12	0.06	0.01	0.0	0.1	0.34	0.3	0.00	0.03	0.00	-	0.00	0.02	0.01	0.00	0.07	0.04	0.03	0.06	-

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Station 38, Utah Lake at Provo, Utah

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	48.0	1.5	6.7	-	0.08	0.01	0.00	0.0	0.0	0.20	0.2	0.00	0.01	0.00	-	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	-
76	Common carp	47.6	1.5	8.9	-	0.20	0.09	0.01	0.0	0.1	0.20	0.3	0.00	0.02	0.00	-	0.00	0.01	0.01	0.01	0.03	0.01	0.00	0.01	-
76	Q/A re-analysis	-	-	8.3	-	0.12	0.07	0.00	-	-	0.45	-	0.00	0.02	0.00	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-
76	Walleye	58.3	1.6	8.5	-	0.11	0.05	0.01	0.0	0.0	0.10	0.2	0.00	0.01	0.00	-	0.00	0.03	0.00	0.00	0.02	0.01	0.01	0.02	-
78	Common carp	41.7	1.0	7.4	78.0	0.07	0.04	0.00	0.0	0.0	0.17	0.1	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.01	0.01	0.01	0.00
78	Common carp	42.7	1.1	6.6	78.7	0.08	0.05	0.00	0.0	0.0	0.18	0.2	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.01	0.00
78	Q/A re-analysis	-	-	5.5	-	0.06	0.00	0.00	-	0.0	0.04	0.1	-	-	-	-	-	0.02	-	-	0.00	0.00	-	-	-
78	White bass	22.9	0.1	3.4	72.7	0.04	0.02	0.00	0.0	0.0	0.13	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00

Station 39, Sacramento River at Sacramento, Calif.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Goldfish	31.5	0.6	6.0	68.7	0.69	0.19	0.00	0.0	0.0	0.10	0.6	0.90	0.01	0.00	-	0.00	0.02	0.00	0.00	0.05	0.01	0.03	0.07	-
77	Goldfish	25.9	0.3	7.1	66.0	0.54	0.22	0.00	0.0	0.0	0.20	0.2	0.70	0.00	0.00	-	0.00	0.02	0.00	0.00	0.08	0.02	0.00	0.06	-
77	Largemouth bass	31.7	0.5	5.0	68.7	0.46	0.13	0.00	0.0	0.0	0.10	0.1	0.40	0.00	0.00	-	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.02	
79	Brown bullhead	-	-	2.3	80.1	0.23	0.09	0.03	-	0.0	0.00	0.0	0.20	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Largemouth bass	-	-	4.0	73.9	0.25	0.08	0.01	-	0.0	0.10	0.0	0.30	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.01	0.00

Station 40, San Joaquin River at Los Banos, Calif.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Sacramento blackfish	31.2	0.4	8.5	70.0	0.20	0.06	0.00	0.0	0.0	0.00	0.1	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.02	-
77	Sacramento blackfish	27.9	0.3	6.5	72.5	0.16	0.04	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.01	-
77	Striped bass	33.0	0.4	7.0	66.0	0.16	0.06	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.01	-
79	Black bullhead	0-	-	2.2	80.0	0.10	0.04	0.01	-	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00
79	Q/A re-analysis	-	-	2.3	-	0.11	0.03	0.00	-	0.1	0.05	0.0	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-
79	Black bullhead	-	-	1.6	81.4	0.09	0.02	0.00	-	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Green sunfish	-	-	5.1	78.6	0.09	0.02	0.00	-	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00

Station 41, Snake River at Hagerman, Idaho

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Largescale sucker	34.8	0.4	3.5	-	0.16	0.04	0.01	0.0	0.0	0.20	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Largescale sucker	34.3	0.4	3.0	-	0.15	0.03	0.01	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Northern squawfish	38.9	0.5	4.6	-	0.99	0.11	0.00	0.0	0.0	1.10	0.4	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00	-
76	Rainbow trout	35.1	0.5	4.6	-	0.16	0.02	0.01	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.03	0.00	0.00	0.01	0.01	0.00	0.00	-
78	Largescale sucker	41.4	0.9	6.8	63.8	0.46	0.11	0.04	0.0	0.0	0.28	0.1	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.01	0.03	0.00
78	Largescale sucker	40.6	0.8	8.8	73.1	0.49	0.16	0.03	0.0	0.0	0.20	0.1	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.01	0.02	0.03	0.00
78	Rainbow trout	34.0	0.5	6.3	70.8	0.16	0.04	0.01	0.0	0.1	0.00	0.7	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00

Station 42, Snake River at Lewiston, Idaho--Clarkston, Wash.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Largescale sucker	39.1	0.6	8.7	-	0.26	0.06	0.06	0.0	0.0	0.30	0.0	0.70	0.01	0.00	-	0.01	0.05	0.00	0.01	0.01	0.01	0.00	0.00	-
76	Largescale sucker	40.4	0.6	7.3	-	0.56	0.23	0.22	0.0	0.0	0.00	0.3	0.00	0.01	0.00	-	0.00	0.09	0.02	0.02	0.04	0.01	0.00	0.00	-
76	Northern squawfish	38.6	0.5	6.8	-	0.49	0.07	0.00	0.0	0.0	2.80	0.0	0.70	0.01	0.00	-	0.00	0.05	0.00	0.00	0.04	0.03	0.00	0.00	-
78	Largescale sucker	40.9	0.7	9.2	68.9	0.26	0.09	0.11	0.0	0.1	0.20	0.1	0.30	0.01	0.00	0.15	0.01	0.03	0.00	0.01	0.02	0.00	0.02	0.01	0.00
78	Largescale sucker	40.9	0.7	6.0	71.4	0.36	0.10	0.00	0.0	0.1	0.20	0.1	0.50	0.00	0.00	0.00	0.01	0.02	0.00	0.01	0.02	0.00	0.00	0.01	0.00
78	Smallmouth bass	34.0	0.6	6.6	70.2	0.28	0.08	0.06	0.0	0.0	0.10	0.2	0.40	0.00	0.00	0.05	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.02	0.00

Station 43, Salmon River at Riggins, Idaho

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Largescale sucker	46.2	0.8	3.8	-	0.12	0.03	0.02	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	-
76	Largescale sucker	45.5	0.9	4.3	-	0.14	0.02	0.02	0.0	0.0	0.10	0.1	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	-
78	Bridgelip sucker	35.8	0.5	7.5	70.1	0.03	0.01	0.02	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Bridgelip sucker	33.5	0.4	5.3	74.1	0.01	0.01	0.01	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Northern squawfish	38.4	0.6	8.5	71.5	0.52	0.20	0.00	0.0	0.1	0.40	0.4	0.30	0.01	0.00	0.03	0.00	0.01	0.00	0.00	0.03	0.01	0.02	0.04	0.00

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BEST DOCUMENT AVAILABLE

Station 44, Yakima River at Granger, Wash.

						-----p,p'-DDT Homologs-----			-------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-------------Cyclodiene Insecticides-------------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Black crappie	15.2	0.0	3.0	-	0.78	0.30	0.10	0.0	0.0	0.20	0.1	0.00	0.01	0.00	-	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00	-
76	Largescale sucker	29.5	0.3	6.9	-	0.81	0.28	0.04	0.0	0.0	0.20	0.2	0.00	0.01	0.00	-	0.01	0.03	0.00	0.01	0.00	0.01	0.00	0.00	-
76	Q/A re-analysis	-	-	6.4	-	1.10	0.22	0.00	-	-	0.00	-	0.00	0.00	0.00	-	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	-
76	Largescale sucker	30.7	0.3	4.5	-	0.40	0.19	0.02	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.03	0.00	0.00	0.03	0.03	0.00	0.00	-
78	Common carp	35.6	0.5	4.7	69.6	1.24	0.28	0.00	0.0	0.0	0.20	0.3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.01	0.01	0.01	0.00
78	Common carp	32.8	0.5	5.3	70.1	1.19	0.23	0.01	0.0	0.0	0.14	0.3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.05	0.01	0.00	0.00	0.00
78	White crappie	14.5	0.0	3.1	-	0.10	0.11	0.05	0.0	0.0	0.12	0.0	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00

Station 45, Willamette River at Oregon City, Oreg.

						-----p,p'-DDT Homologs-----			-------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-------------Cyclodiene Insecticides-------------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Smallmouth bass	23.4	0.2	6.8	-	0.06	0.03	0.02	0.0	0.0	0.40	0.2	0.00	0.01	0.02	-	0.00	0.04	0.00	0.01	0.04	0.01	0.00	0.00	-
76	Chiselmouth	25.9	0.2	13.2	-	0.07	0.07	0.00	0.0	0.0	2.00	0.3	0.00	0.16	0.02	-	0.00	0.02	0.00	0.00	0.06	0.02	0.00	0.00	-
76	Chiselmouth	27.4	0.2	11.2	-	0.12	0.04	0.00	0.0	0.2	0.20	0.3	0.00	0.08	0.02	-	0.01	0.02	0.00	0.00	0.03	0.01	0.00	0.02	-
78	Northern squawfish	37.8	0.5	6.9	74.4	0.42	0.00	0.12	0.0	0.0	0.77	0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.03	0.05	0.00
78	Chiselmouth	27.4	0.2	6.9	74.3	0.09	0.05	0.00	0.0	0.1	0.30	0.2	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.03	0.01	0.01	0.02	0.00
78	Chiselmouth	25.9	0.1	7.6	65.7	0.09	0.06	0.00	0.0	0.2	0.30	0.1	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.03	0.01	0.01	0.02	0.00

Station 46, Columbia River at Cascade Locks, Wash.--Oreg.

						-----p,p'-DDT Homologs-----			-------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-------------Cyclodiene Insecticides-------------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Largescale sucker	34.3	0.4	6.0	-	0.18	0.04	0.01	0.0	0.1	0.30	0.2	0.00	0.07	0.01	-	0.01	0.01	0.00	0.00	0.02	0.01	0.01	0.02	-
76	Largescale sucker	31.5	0.4	9.9	-	0.09	0.07	0.03	0.0	0.0	2.10	0.7	0.00	0.07	0.02	-	0.01	0.01	0.00	0.00	0.05	0.01	0.00	0.00	-
76	Northern squawfish	36.3	0.5	7.9	-	0.27	0.12	0.02	0.0	0.0	1.60	0.4	0.10	0.01	0.00	-	0.00	0.02	0.01	0.00	0.32	0.19	0.00	0.00	-
78	Largescale sucker	42.2	0.8	11.1	66.1	0.23	0.14	0.03	0.0	0.0	0.24	0.0	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.01	0.00
78	Largescale sucker	43.7	0.9	8.5	70.1	0.35	0.21	0.04	0.0	0.0	0.20	0.2	0.10	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.01	0.01	0.02	0.00
78	Northern squawfish	39.9	0.6	12.3	72.5	0.36	0.03	0.00	0.0	0.1	0.40	0.3	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.00

Station 47, Klamath River at Hornbrook, Calif.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Klamath sucker	31.5	0.3	2.9	72.6	0.01	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Klamath sucker	31.7	0.3	2.0	75.6	0.01	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Yellow perch	23.4	0.2	2.9	72.1	0.01	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Klamath sucker	-	-	6.1	73.6	0.01	0.00	0.00	-	0.0	0.10	0.0	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Klamath sucker	-	-	5.7	73.5	0.02	0.01	0.01	-	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	Yellow perch	-	-	2.8	74.6	0.01	0.00	0.00	-	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 48, Rogue River at Goldray Dam, Oreg.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Black crappie	23.1	0.4	9.0	63.9	2.32	0.38	0.05	0.0	0.0	0.70	0.4	0.00	0.03	0.00	-	0.02	0.08	0.00	0.00	0.06	0.02	0.00	0.05	-
77	Klamath sucker	22.1	0.1	6.8	68.5	0.24	0.07	0.05	0.0	0.0	0.10	0.0	0.00	0.03	0.00	-	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.01	-
77	Klamath sucker	23.1	0.1	6.3	68.5	0.20	0.05	0.06	0.0	0.0	0.10	0.0	0.00	0.02	0.00	-	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.01	-
79	Black crappie	25.1	0.3	9.2	60.9	0.65	0.20	0.03	-	0.0	0.40	0.0	0.00	0.00	0.00	0.03	0.00	0.04	0.00	0.03	0.05	0.01	0.01	0.03	0.00
79	Redside shiner	11.7	0.0	6.3	73.4	0.41	0.08	0.00	-	0.0	0.40	0.1	0.00	0.00	0.00	0.08	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.02	0.00

Station 49, Chena River at Fairbanks, Alaska

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Arctic grayling	26.7	0.2	2.2	76.3	0.13	0.02	0.07	0.0	0.0	0.00	0.4	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Longnose sucker	37.1	0.6	5.1	74.4	0.12	0.05	0.13	0.0	0.0	0.70	0.5	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Burbot	51.3	1.1	4.2	78.7	0.06	0.04	0.06	-	0.0	0.20	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
79	Longnose sucker	35.6	0.6	2.0	78.3	0.12	0.02	0.04	-	0.0	0.80	0.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Station 50, Kenai River at Soldatna, Alaska

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
78	Rainbow trout	23.9	0.0	13.1	64.2	0.03	0.01	0.01	0.0	0.0	0.10	0.0	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Round whitefish	38.4	0.1	12.8	67.5	0.02	0.01	0.02	0.0	0.0	0.00	0.0	0.20	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Dolly Varden	32.0	0.1	17.7	64.1	0.00	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 51, Kennebec River at Hinckley, Maine

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	White sucker	36.1	0.5	3.9	-	0.16	0.09	0.05	0.0	0.0	0.00	0.3	0.00	0.04	0.00	-	0.00	0.01	0.02	0.00	0.04	0.02	0.00	0.00	-
76	White sucker	36.8	0.5	8.0	-	0.07	0.03	0.03	0.0	0.1	0.10	0.1	0.00	0.01	0.00	-	0.00	0.01	0.01	0.00	0.02	0.01	0.00	0.01	-
76	Yellow perch	24.4	0.2	6.0	-	0.01	0.01	0.01	0.0	0.1	0.20	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-
78	White sucker	36.6	0.5	3.4	78.3	0.01	0.01	0.00	0.0	0.2	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02
78	White sucker	33.0	0.4	3.7	77.3	0.00	0.01	0.00	0.0	0.1	0.00	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.02
78	Yellow perch	20.8	0.1	3.1	74.5	0.02	0.01	0.00	0.0	0.0	0.10	0.1	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01

Station 52, Lake Champlain at Burlington, Vt.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Brown bullhead	28.2	0.4	4.2	-	0.07	0.03	0.00	0.0	0.1	0.30	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Brown bullhead	27.2	0.3	4.1	-	0.09	0.03	0.01	0.0	0.1	0.50	0.0	0.00	0.01	0.01	-	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.00	-
76	Northern pike	45.2	0.7	2.2	-	0.27	0.05	0.05	0.0	0.2	0.60	0.4	0.00	0.01	0.00	-	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	-
76	Q/A re-analysis	-	-	4.2	-	0.06	0.00	0.00	-	-	0.87	-	0.00	0.00	0.00	-	0.00	0.01	0.00	0.01	0.02	0.03	0.00	0.00	-
78	Northern pike	43.9	0.5	2.2	74.5	0.05	0.03	0.01	0.0	0.1	0.20	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
78	Q/A re-analysis	-	-	2.8	-	0.10	0.00	0.00	-	0.1	0.13	0.1	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-
78	White sucker	28.4	0.3	3.3	75.0	0.06	0.02	0.00	0.0	0.0	0.15	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	White sucker	27.9	0.2	1.9	78.1	0.06	0.01	0.01	0.0	0.1	0.20	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00

Station 53, Merrimack River at Lowell, Mass.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Largemouth bass	24.6	0.2	4.2	-	0.07	0.06	0.01	0.0	0.7	1.10	0.3	0.30	0.03	0.00	-	0.02	0.04	0.00	0.00	0.13	0.03	0.00	0.00	-
76	White sucker	30.0	0.3	5.5	-	0.04	0.11	0.04	0.0	0.0	1.40	0.5	0.00	0.05	0.01	-	0.01	0.03	0.00	0.00	0.16	0.06	0.00	0.00	-
76	White sucker	32.0	0.4	4.2	-	0.12	0.15	0.05	0.0	1.1	1.50	0.7	0.40	0.04	0.00	-	0.04	0.03	0.00	0.00	0.23	0.09	0.00	0.00	-
76	Q/A re-analysis	-	-	4.5	-	0.09	0.12	0.00	-	-	1.30	-	0.60	0.06	0.00	-	0.00	0.02	0.00	0.00	0.10	0.01	0.00	0.00	-
78	Largemouth bass	28.2	0.4	5.9	71.5	0.13	0.06	0.02	0.0	0.7	0.90	0.8	0.20	0.00	0.00	0.00	0.01	0.03	0.00	0.02	0.10	0.03	0.65	0.10	0.02
78	White sucker	33.3	0.5	8.0	72.0	0.18	0.10	0.05	0.0	0.9	1.96	0.8	0.00	0.03	0.00	0.00	0.03	0.02	0.00	0.03	0.08	0.03	0.04	0.08	0.00
78	Q/A re-analysis	-	-	7.8	-	0.16	0.12	0.06	-	0.9	0.50	0.6	-	-	-	-	-	0.02	-	-	0.17	0.09	-	-	-
78	White sucker	34.8	0.5	6.1	71.9	0.13	0.16	0.00	0.0	1.4	1.10	0.9	0.40	0.00	0.00	0.00	0.04	0.04	0.00	0.02	0.12	0.06	0.05	0.09	0.01

Station 54, Raritan River at Highland Park, N.J.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	43.9	1.4	15.4	-	0.11	0.16	0.00	0.0	1.6	1.90	1.7	0.00	0.26	0.03	-	0.00	0.09	0.00	0.06	0.41	0.17	0.00	0.00	-
78	Largemouth bass	26.4	0.3	5.4	70.1	0.24	0.15	0.09	0.0	0.5	1.71	1.7	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.02	0.17	0.05	0.09	0.19	0.02
78	White sucker	36.1	0.5	9.2	70.7	0.27	0.37	0.30	0.0	0.3	3.00	4.5	0.50	0.00	0.01	0.00	0.02	0.08	0.00	0.01	0.52	0.19	0.18	0.31	0.03
78	White sucker	29.2	0.3	7.0	69.4	0.09	0.15	0.12	0.0	0.4	1.40	2.9	0.10	0.00	0.01	0.02	0.00	0.09	0.00	0.03	0.20	0.10	0.09	0.14	0.03

Station 55, James River at Richmond, Va.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Redhorse	40.6	0.8	10.4	59.0	0.51	0.19	0.40	0.0	0.0	1.20	1.3	1.50	0.00	0.00	-	0.00	0.03	0.00	0.00	0.07	0.03	0.04	0.09	-
77	Q/A re-analysis	-	-	12.0	-	0.60	0.22	0.40	-	-	2.30	-	0.00	0.00	0.00	-	0.00	0.04	0.01	0.01	0.07	0.09	0.00	0.00	-
77	Redhorse	44.4	1.0	10.5	67.1	0.10	0.00	0.14	0.0	0.0	0.30	0.5	0.60	0.00	0.00	-	0.00	0.02	0.00	0.00	0.03	0.01	0.01	0.03	-
77	Smallmouth bass	23.4	0.2	4.4	70.9	0.07	0.03	0.01	0.0	0.0	0.20	0.4	0.20	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.02	-
79	Redhorse	42.4	0.9	16.2	63.5	0.25	0.14	0.08	-	0.0	0.60	0.6	0.90	0.00	0.00	0.00	0.00	0.04	0.01	0.02	0.10	0.04	0.04	0.06	0.01
79	Redhorse	42.7	0.9	12.1	69.0	0.17	0.07	0.07	-	0.0	0.40	0.5	0.50	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.05	0.02	0.03	0.05	0.00
79	Q/A re-analysis	-	-	12.0	-	0.18	0.07	0.08	-	0.4	0.21	0.3	-	-	-	-	-	0.02	-	-	0.09	0.02	-	-	-
79	Smallmouth bass	22.9	0.1	3.4	73.2	0.05	0.02	0.02	-	0.0	0.10	0.3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.02	0.00

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Station 56, Pee Dee River at Johnsonville, S.C.

						-----p,p'-DDT Homologs-----			-------PCB's------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-----------Cyclodiene Insecticides-----------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	White catfish	38.4	0.6	6.7	-	0.26	0.10	0.08	0.0	0.1	0.40	0.0	1.70	0.06	0.00	-	0.00	0.02	0.01	0.00	0.05	0.01	0.00	0.02	-
76	White catfish	37.3	0.6	14.7	-	0.24	0.10	0.10	0.0	0.3	0.34	0.1	1.70	0.04	0.00	-	0.20	0.05	0.01	0.01	0.03	0.01	0.00	0.00	-
76	Brown bullhead	37.1	0.7	10.4	-	0.13	0.00	0.00	0.0	0.0	0.20	0.2	1.70	0.03	0.00	-	0.00	0.02	0.01	0.00	0.03	0.01	0.00	0.00	-

Station 57, Altamaha River at Doctortown, Ga.

						-----p,p'-DDT Homologs-----			-------PCB's------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-----------Cyclodiene Insecticides-----------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Channel catfish	44.2	0.9	12.7	-	0.05	0.00	0.00	0.0	0.0	0.00	0.0	1.00	0.04	0.00	-	0.00	0.04	0.01	0.00	0.03	0.06	0.00	0.00	-
76	Largemouth bass	39.1	1.0	8.5	-	0.19	0.03	0.02	0.0	0.0	0.40	0.3	1.20	0.01	0.00	-	0.00	0.04	0.01	0.00	0.02	0.00	0.00	0.00	-
78	Black crappie	24.9	0.2	2.3	72.8	0.06	0.01	0.02	0.0	0.0	0.16	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
78	Carpsucker	34.3	0.5	5.4	68.4	0.21	0.04	0.07	0.0	0.0	0.00	0.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.04	0.00
78	Spotted sucker	36.6	0.5	3.5	-	0.08	0.03	0.04	0.0	0.1	0.10	0.2	0.30	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.02	0.00

Station 59, Alabama River at Chrysler, Ala.

						-----p,p'-DDT Homologs-----			-------PCB's------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-----------Cyclodiene Insecticides-----------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Freshwater drum	25.9	0.3	5.2	75.7	0.04	0.03	0.03	0.0	0.0	0.50	0.3	1.30	0.02	0.00	-	0.01	0.01	0.16	0.00	0.01	0.00	0.00	0.02	-
77	Largemouth bass	40.4	1.0	2.7	76.6	0.22	0.06	0.06	0.0	0.0	0.70	0.6	1.10	0.00	0.00	-	0.01	0.01	0.00	0.00	0.02	0.00	0.01	0.03	-
77	Mixed species	34.3	0.8	5.1	70.6	0.29	0.09	0.16	0.0	0.0	0.60	0.5	1.40	0.02	0.00	-	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.01	-
79	Smallmouth buffalo	48.5	1.9	9.5	71.1	0.74	0.20	0.14	-	0.0	1.40	0.7	2.00	0.00	0.00	0.00	0.05	0.02	0.03	0.02	0.10	0.02	0.00	0.03	0.00
79	Smallmouth buffalo	46.8	1.6	10.3	71.5	0.23	0.13	0.06	-	0.0	0.90	0.3	1.70	0.00	0.00	0.00	0.01	0.02	0.03	0.02	0.06	0.02	0.00	0.02	0.00
79	Bowfin	57.1	1.0	7.2	78.5	0.12	0.05	0.02	-	0.0	0.50	0.3	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00

BEST DO[illegible] AVAILABLE

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Station 60. Brazos River at Richmond, Tex.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Alligator gar	47.0	0.5	4.0	61.6	1.13	0.08	0.03	0.0	0.0	0.00	0.2	1.40	0.00	0.00	-	0.00	0.00	0.00	0.01	0.04	0.02	0.00	0.04	-
77	Gizzard shad	25.1	0.2	6.0	72.2	0.24	0.06	0.02	0.0	0.0	0.30	0.1	1.00	0.00	0.00	-	0.02	0.01	0.00	0.01	0.06	0.02	0.02	0.0	-
77	Striped mullet	35.0	0.6	12.6	60.5	0.12	0.07	0.03	0.0	0.0	0.00	0.2	0.60	0.00	0.00	-	0.01	0.03	0.00	0.02	0.09	0.04	0.02	0.06	-
77	Q/A re-analysis	-	-	13.0	-	0.07	0.08	0.05	-	-	0.25	-	0.00	0.00	0.00	-	0.00	0.03	0.00	0.01	0.07	0.00	0.00	0.00	-
77	Striped mullet	33.0	0.5	8.7	62.0	0.17	0.01	0.00	0.0	0.0	0.00	0.2	0.60	0.00	0.00	-	0.02	0.02	0.00	0.01	0.06	0.03	0.00	0.03	-
79	Longnose gar	72.9	1.0	3.9	72.4	1.55	0.11	0.02	-	0.0	0.10	0.6	1.30	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.01	0.01	0.03	0.01
79	Smallmouth buffalo	44.7	0.9	7.7	71.9	0.30	0.11	0.05	-	0.0	0.20	0.1	1.40	0.00	0.01	0.00	0.13	0.04	0.00	0.02	0.10	0.04	0.04	0.07	0.01
79	Q/A re-analysis	-	-	9.4	-	0.45	0.10	0.00	-	0.4	0.04	0.1	-	-	-	-	-	0.04	-	-	0.22	0.05	-	-	-
79	Smallmouth buffalo	33.0	0.4	4.5	75.9	0.09	0.02	0.00	-	0.0	0.10	0.0	0.30	0.00	0.00	0.00	0.01	[illegible]	0.00	0.00	0.01	0.00	0.00	0.00	0.00

Station 61. Colorado River at Wharton, Tex.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Channel catfish	31.5	0.3	4.5	75.0	0.05	0.02	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Channel catfish	33.8	0.4	4.9	72.7	0.06	0.03	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	-
77	Gizzard shad	31.0	0.4	19.7	63.3	0.07	0.07	0.00	0.0	0.0	0.00	0.0	0.30	0.00	0.00	-	0.00	0.04	0.00	0.00	0.01	0.00	0.00	0.0	-
77	Largemouth bass	23.9	0.2	2.3	76.1	0.14	0.03	0.00	0.0	0.0	0.00	0.1	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	-
79	Channel catfish	37.1	0.5	4.6	79.3	0.34	0.04	0.00	-	0.0	0.00	0.0	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
79	Freshwater drum	30.2	0.6	7.5	73.1	0.35	0.08	0.05	-	0.0	0.10	0.2	0.80	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.03	0.01	0.02	0.03	0.00
79	Freshwater drum	22.9	0.2	4.6	73.9	0.08	0.02	0.05	-	0.0	0.10	0.0	0.40	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00

Station 62. Nueces River at Mathis, Tex.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Gizzard shad	28.7	0.3	7.3	67.0	0.10	0.02	0.00	0.0	0.0	0.00	0.0	0.60	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.0	-
77	Gizzard shad	28.7	0.3	8.3	66.4	0.11	0.03	0.00	0.0	0.0	0.00	0.0	0.60	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.0	-
77	Largemouth bass	33.0	0.7	5.0	78.9	0.37	0.02	0.00	0.0	0.0	0.00	0.0	0.60	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	-
79	Channel catfish	28.7	0.2	2.4	79.6	0.13	0.01	0.00	-	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Channel catfish	32.0	0.3	2.8	76.6	0.17	0.00	0.00	-	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Blue catfish	30.5	0.2	1.7	80.1	0.21	0.01	[illegible]	-	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00

Station 63, Rio Grande at Elephant Butte, N. Mex.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	River carpsucker	37.8	0.8	12.6	-	0.06	0.02	0.01	0.0	0.0	0.20	0.2	0.30	0.03	0.01	-	0.00	0.01	0.00	0.00	0.03	0.01	0.00	0.02	-
76	River carpsucker	43.2	1.0	9.5	-	0.05	0.01	0.01	0.0	0.0	0.10	0.2	0.20	0.01	0.00	-	0.01	0.01	0.00	0.01	0.02	0.01	0.00	0.01	-
76	Walleye	43.4	0.9	12.0	-	0.12	0.01	0.02	0.0	0.6	0.40	0.3	0.30	0.03	0.01	-	0.00	0.02	0.01	0.00	0.03	0.01	0.01	0.02	-
78	Common carp	41.7	0.8	1.8	74.9	0.08	0.01	0.00	0.0	0.0	[illegible]	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
78	Common carp	37.3	0.6	2.1	75.3	0.06	0.01	0.00	0.0	0.0	0.28	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
78	Largemouth bass	38.4	1.1	3.5	71.0	0.10	0.02	0.00	0.0	0.1	0.25	0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.03	0.00

Station 64, Rio Grande at Alamosa, Colo.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Brown trout	28.4	0.3	4.5	-	0.24	0.18	0.01	0.0	0.1	0.50	0.0	0.00	0.17	0.24	-	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-
76	Q/A re-analysis	-	-	7.0	-	0.17	0.15	0.00	-	-	0.43	-	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	-
76	White sucker	27.2	0.2	3.4	-	0.13	0.09	0.02	0.0	0.0	0.30	0.0	0.00	0.19	0.28	-	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	-
76	White sucker	27.4	0.2	3.0	-	0.10	0.07	0.02	0.0	0.0	0.30	0.0	0.00	0.19	0.28	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-
78	Brown trout	16.0	0.0	6.3	-	0.11	0.09	0.00	0.0	0.0	0.22	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
78	Q/A re-analysis	-	-	5.2	-	0.11	0.07	0.00	-	0.0	0.14	0.0	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-
78	White sucker	25.1	0.2	3.6	78.5	0.62	0.05	0.00	0.0	0.0	0.17	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	White sucker	20.3	0.1	2.6	74.0	0.09	0.00	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 65, Pecos River at Red Bluff Lake, Tex.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlurdane
78	Gizzard shad	32.5	0.4	7.3	-	0.16	0.04	0.00	0.0	0.0	0.10	0.0	0.20	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.0	0.00
78	Gizzard shad	29.0	0.2	5.7	69.8	0.25	0.04	0.02	0.0	0.0	0.15	0.0	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.0	0.00
78	White bass	36.6	0.8	9.0	67.9	0.17	0.04	0.00	0.0	0.0	0.10	0.0	0.20	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00

Station 66, St. Lawrence River at Massena, N.Y.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Smallmouth bass	32.0	0.5	6.7	68.2	0.35	0.12	0.06	0.0	0.0	1.10	0.9	0.70	0.01	0.00	-	0.01	0.02	0.00	0.00	0.03	0.00	0.02	0.06	-
77	White sucker	35.8	0.6	4.9	74.6	0.10	0.03	0.00	0.0	0.0	0.60	0.3	0.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Smallmouth bass	30.5	0.5	4.0	72.8	0.20	0.05	0.04	-	0.0	1.00	0.7	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.03	0.00
79	White sucker	37.1	0.6	2.2	78.6	0.09	0.00	0.00	-	0.0	0.40	0.2	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00
79	White sucker	38.6	0.6	2.3	77.8	0.06	0.01	0.00	-	0.0	0.20	0.2	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00

Station 67, Allegheny River at Natrona, Pa.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Redhorse	26.9	0.2	1.6	-	0.02	0.01	0.01	0.0	0.0	0.20	0.4	0.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	-
76	Redhorse	33.5	0.4	2.1	-	0.02	0.01	0.01	0.0	0.0	0.50	0.2	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.02	0.01	0.00	0.00	-
76	Walleye	31.5	0.3	4.3	-	0.14	0.02	0.02	0.0	0.2	1.00	0.9	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.05	0.01	0.00	0.06	-
78	Redhorse	23.4	0.2	2.6	74.2	0.04	0.01	0.01	0.0	0.0	0.30	0.3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.02	0.00
78	Redhorse	25.7	0.2	4.2	73.3	0.04	0.01	0.01	0.0	0.1	0.27	0.1	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.02	0.01	0.02	0.00
78	Smallmouth bass	27.7	0.4	3.9	72.8	0.06	0.02	0.02	0.0	0.1	0.49	0.6	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.02	0.05	0.01
78	Q/A re-analysis	-	-	3.3	-	0.06	0.02	0.03	-	0.0	0.29	0.5	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-
79	Largemouth bass	24.1	0.2	3.4	75.9	0.11	0.02	0.04	-	0.0	0.70	0.5	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.01	0.02	0.03	0.00
79	Redhorse	22.1	0.1	1.7	77.9	0.03	0.01	0.01	-	0.0	0.20	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
79	Redhorse	22.9	0.2	1.3	77.2	0.00	0.00	0.01	-	0.0	0.20	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00

Station 68, Wabash River at New Harmony, Ind.--Crossville, Ill.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	42.7	1.2	5.5	-	0.05	0.06	0.01	0.0	0.4	0.60	0.2	0.00	0.01	0.01	-	0.00	0.14	0.00	0.00	0.21	0.08	0.05	0.00	-
76	Common carp	40.9	1.1	8.8	-	0.20	0.09	0.01	0.0	2.0	2.40	0.8	0.00	0.01	0.01	-	0.00	0.22	0.01	0.00	0.22	0.10	0.00	0.00	-
76	Q/A re-analysis	-	-	12.0	-	0.19	0.14	0.00	-	-	3.40	-	0.00	0.00	0.00	-	0.00	0.36	0.00	0.04	0.26	0.27	0.00	0.00	-
76	Largemouth bass	27.2	0.3	2.9	-	0.02	0.03	0.01	0.0	0.0	0.50	0.2	0.00	0.01	0.00	-	0.00	0.12	0.00	0.00	0.10	0.02	0.03	0.00	-
78	Common carp	40.6	1.0	7.8	68.3	0.15	0.05	0.00	0.0	0.8	1.00	0.9	0.30	0.00	0.00	0.01	0.00	0.24	0.00	0.04	0.15	0.09	0.08	0.12	0.01
78	Q/A re-analysis	-	-	7.8	-	0.18	0.05	0.00	-	1.0	0.57	0.6	-	-	-	-	-	0.30	-	-	0.14	0.08	-	-	-
78	Common carp	44.2	1.2	4.2	72.2	0.07	0.04	0.00	0.0	0.7	1.40	0.8	0.20	0.00	0.00	0.00	0.00	0.18	0.00	0.03	0.18	0.11	0.11	0.15	0.00
78	Largemouth bass	22.6	0.2	1.1	74.8	0.04	0.01	0.00	0.0	0.1	0.20	0.2	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.02	0.01	0.03	0.05	0.01

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Station 69, Ohio River at Cincinnati, Ohio

						-----p,p'-DDT Homologs-----			--------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-Cyclodiene Insecticides-							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Channel catfish	28.2	0.2	11.5	-	0.50	0.12	0.21	0.0	3.7	3.90	1.4	0.00	0.20	0.01	-	0.00	0.14	0.09	0.06	0.32	0.17	0.11	0.33	-
76	Q/A re-analysis	-	-	13.0	-	0.40	0.02	0.00	-	-	6.50	-	0.00	0.00	0.00	-	0.00	0.37	0.24	0.03	0.20	0.27	0.00	0.00	-
76	Channel catfish	39.4	0.6	14.9	-	0.09	0.07	0.03	0.0	0.0	3.00	0.8	0.00	0.04	0.01	-	0.00	0.17	0.09	0.00	0.30	0.11	0.03	0.00	-
76	Sauger	34.0	0.5	8.1	-	0.07	0.09	0.03	0.0	1.6	2.00	0.7	0.00	0.05	0.01	-	0.03	0.10	0.04	0.00	0.30	0.15	0.07	0.00	-
76	Smallmouth buffalo	31.0	0.5	5.7	-	0.00	0.07	0.04	0.0	2.1	3.30	0.9	0.00	0.04	0.01	-	0.00	0.10	0.09	0.00	0.26	0.12	0.05	0.00	-
76	Smallmouth buffalo	34.8	0.7	11.6	-	0.14	0.17	0.10	0.0	2.6	4.00	1.2	0.00	0.06	0.01	-	0.00	0.10	0.04	0.00	0.61	0.29	0.00	0.00	-
78	Common carp	49.3	1.4	6.5	69.1	0.19	0.06	0.00	0.0	1.4	3.14	1.7	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.07	0.15	0.10	0.07	0.11	0.01
78	Common carp	36.3	0.5	5.2	70.0	0.15	0.04	0.00	0.0	1.4	3.32	1.2	0.00	0.02	0.00	0.00	0.00	0.06	0.00	0.02	0.14	0.09	0.06	0.12	0.00
78	Q/A re-analysis	-	-	4.8	-	0.11	0.05	0.00	-	1.5	1.54	0.8	-	-	-	-	-	0.00	-	-	0.22	0.12	-	-	-
78	Sauger	39.6	0.5	11.4	67.4	0.18	0.08	0.06	0.0	2.7	2.07	0.9	0.00	0.00	0.00	0.00	0.02	0.11	0.00	0.13	0.59	0.26	0.17	0.38	0.00

Station 70, Ohio River at Metropolis, Ill.--Paducah, Ky.

						-----p,p'-DDT Homologs-----			--------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-Cyclodiene Insecticides-							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	41.9	1.1	13.0	-	0.53	0.32	0.00	0.0	0.2	1.40	1.0	0.70	0.03	0.01	-	0.01	0.00	0.01	0.02	0.10	0.13	0.07	0.16	-
76	Common carp	41.1	1.0	4.2	-	0.30	0.09	0.01	0.0	0.0	0.70	0.4	0.30	0.01	0.01	-	0.00	0.03	0.01	0.00	0.11	0.05	0.00	0.00	-
76	Largemouth bass	36.1	0.8	2.6	-	0.47	0.13	0.09	0.0	0.0	2.30	1.6	0.40	0.01	0.01	-	0.00	0.10	0.01	0.01	0.16	0.01	0.00	0.00	-
78	Common carp	44.4	1.2	7.6	69.4	0.27	0.12	0.00	0.0	0.5	1.10	0.6	0.30	0.00	0.00	0.00	0.01	0.09	0.00	0.03	0.12	0.07	0.06	0.10	0.01
78	Common carp	44.4	1.3	8.8	67.3	0.23	0.11	0.00	0.0	0.6	1.20	0.9	0.30	0.00	0.00	0.01	0.02	0.11	0.00	0.03	0.15	0.09	0.10	0.12	0.02
78	Largemouth bass	35.8	0.7	4.8	70.4	0.12	0.08	0.02	0.0	0.3	0.74	0.8	0.00	0.00	0.00	0.00	0.00	0.07	0.01	0.01	0.08	0.02	0.07	0.11	0.01

Station 71, Tennessee River at Savannah, Tenn.

						-----p,p'-DDT Homologs-----			--------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-Cyclodiene Insecticides-							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
78	White bass	36.1	0.6	7.1	69.2	0.65	0.70	0.00	0.0	0.3	0.65	0.4	1.00	0.01	0.00	0.00	0.00	0.03	0.05	0.01	0.09	0.01	0.03	0.04	0.00
79	Common carp	-	-	7.0	75.2	0.58	0.24	0.00	-	0.0	0.70	0.7	0.60	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.06	0.02	0.02	0.03	0.58
79	Carpsucker	-	-	10.0	68.5	1.42	1.37	0.32	-	0.0	1.80	0.7	4.70	0.00	0.00	0.00	0.00	0.03	0.02	0.03	0.21	0.04	0.03	0.07	0.31

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Station 72, Wisconsin River at Woodman, Wis.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	43.7	1.0	3.6	-	0.04	0.01	0.00	0.0	0.0	0.40	0.1	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Common carp	45.0	1.1	4.1	-	0.13	0.02	0.00	0.0	0.0	0.60	0.2	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Smallmouth bass	32.8	0.5	4.4	-	0.05	0.01	0.01	0.0	0.0	0.40	0.1	0.00	0.01	0.00	-	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	-
78	Common carp	-	-	14.2	-	0.37	0.13	0.00	0.0	3.4	3.10	0.3	0.10	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.06	0.03	0.03	0.04	0.02
78	Common carp	-	-	4.8	-	0.04	0.02	0.00	0.0	0.3	0.30	0.0	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00
78	Walleye	-	-	6.6	-	0.07	0.04	0.00	0.0	0.5	0.50	0.2	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.00	0.01	0.02	0.00

Station 73, Des Moines River at Keosauqua, Iowa

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	39.6	0.9	8.4	-	0.16	0.11	0.00	0.0	0.0	0.80	0.0	0.20	0.01	0.00	-	0.00	0.30	0.00	0.00	0.16	0.14	0.00	0.00	-
76	Common carp	39.1	0.9	7.9	-	0.31	0.08	0.01	0.0	0.0	0.50	0.5	0.10	0.01	0.01	-	0.00	0.26	0.01	0.06	0.16	0.09	0.00	0.00	-
76	Walleye	41.9	0.7	3.3	-	0.07	0.04	0.03	0.0	0.0	0.10	0.2	0.50	0.01	0.01	-	0.00	0.17	0.01	0.05	0.10	0.07	0.04	0.04	-
78	Common carp	35.8	0.6	7.2	71.1	0.06	0.04	0.00	0.0	0.1	0.20	0.1	0.30	0.01	0.00	0.01	0.00	0.18	0.00	0.07	0.09	0.11	0.05	0.06	0.02
78	Common carp	37.3	0.7	8.1	70.7	0.12	0.05	0.00	0.0	0.0	0.21	0.3	0.00	0.01	0.00	0.00	0.00	0.04	0.00	0.05	0.09	0.09	0.05	0.07	0.02
78	Sauger	33.5	0.3	2.6	74.5	0.24	0.05	0.05	0.0	0.1	1.01	0.6	0.40	0.00	0.00	0.00	0.00	0.15	0.00	0.04	0.17	0.09	0.13	0.21	0.03

Station 74, Mississippi River at Little Falls, Minn.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Black bullhead	20.8	0.1	3.5	-	0.03	0.04	0.00	0.0	0.0	0.00	0.0	0.03	0.01	0.01	-	0.00	0.01	0.00	0.00	0.03	0.02	0.00	0.00	-
76	Black bullhead	20.1	0.1	3.7	-	0.01	0.00	0.00	0.0	0.0	0.10	0.1	0.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-
76	Walleye	28.2	0.2	2.3	-	0.04	0.01	0.01	0.0	0.0	0.10	0.2	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	-
78	White sucker	42.9	1.0	3.6	73.5	0.02	0.01	0.01	0.0	0.0	0.14	0.2	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
76	White sucker	31.5	0.4	1.0	-	0.01	0.00	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Yellow perch	20.1	0.1	3.3	70.3	0.01	0.00	0.00	0.0	0.0	0.01	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 75, Mississippi River at Cape Girardeau, Mo.--Ill.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	36.6	0.6	4.7	-	0.12	0.06	0.03	0.0	0.0	0.90	0.7	0.60	0.01	0.00	-	0.00	0.10	0.01	0.02	0.09	0.05	0.00	0.00	-
76	Common carp	39.1	0.8	6.5	-	0.35	0.09	0.07	0.0	0.1	1.90	1.2	0.40	0.03	0.01	-	0.00	0.00	0.00	0.00	0.19	0.08	0.00	0.00	-
76	Q/A re-analysis	-	-	12.0	-	0.44	0.11	0.00	-	-	2.80	-	0.00	0.11	0.00	-	0.00	0.14	0.00	0.02	0.12	0.09	0.00	0.00	-
76	White crappie	22.1	0.1	0.3	-	0.01	0.00	0.00	0.0	0.0	0.10	0.1	0.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-
78	Common carp	42.9	1.1	8.5	68.1	0.37	0.20	0.00	0.0	0.6	2.70	4.1	1.10	0.00	0.00	0.00	0.01	0.22	0.01	0.09	0.34	0.32	0.16	0.34	0.03
78	Common carp	39.6	1.0	9.4	68.6	0.21	0.11	0.00	0.0	0.0	1.09	1.5	0.60	0.02	0.00	0.00	0.00	0.24	0.01	0.06	0.17	0.17	0.07	0.13	0.02
78	Q/A re-analysis	-	-	9.0	-	0.21	0.12	0.00	-	0.6	0.47	1.0	-	-	-	-	-	0.20	-	-	0.19	0.10	-	-	-
78	White crappie	22.6	0.2	2.4	73.3	0.04	0.03	0.00	0.0	0.1	0.20	0.3	0.20	0.00	0.00	0.00	0.00	0.09	0.00	0.01	0.05	0.03	0.03	0.04	0.00

Station 76, Mississippi River at Memphis, Tenn.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Smallmouth buffalo	43.9	1.2	17.9	58.2	0.32	0.19	0.03	0.0	0.0	0.50	0.6	3.30	0.12	0.12	-	0.00	0.13	0.17	0.05	0.14	0.14	0.01	0.06	-
77	Smallmouth buffalo	41.7	1.4	13.4	62.4	0.19	0.03	0.03	0.0	0.0	0.50	0.5	2.40	0.10	0.10	-	0.00	0.11	0.14	0.17	0.10	0.32	0.03	0.08	-
77	Q/A re-analysis	-	-	13.0	-	0.22	0.19	0.00	-	-	0.84	-	0.00	0.00	0.00	-	0.00	0.10	0.50	0.07	0.31	0.16	0.00	0.00	-
79	Bluegill	15.7	0.1	3.5	75.0	0.08	0.04	0.00	-	0.0	0.30	0.3	0.30	0.00	0.00	0.00	0.00	0.05	0.00	0.01	0.01	0.00	0.03	0.10	0.02
79	Smallmouth buffalo	39.6	0.8	17.[illegible]	64.8	0.44	0.24	0.08	-	0.0	0.70	0.4	1.00	0.00	0.01	0.01	0.02	0.17	0.05	0.07	0.16	0.11	0.03	0.07	0.01
79	Q/A re-analysis	-	-	19.4	-	0.36	0.19	0.00	-	1.1	0.30	0.3	-	-	-	-	-	0.19	-	-	0.00	0.00	-	-	-
79	Smallmouth buffalo	40.1	0.9	17.5	65.0	0.36	0.28	0.10	-	0.0	0.40	0.4	1.50	0.00	0.01	0.01	0.01	0.16	0.03	0.04	0.11	0.07	0.03	0.06	0.00

Station 78, Verdigris River at Oologah, Okla.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	45.2	1.1	5.7	68.7	0.10	0.03	0.00	0.0	0.0	1.10	0.9	0.10	0.01	0.00	-	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.02	-
77	Common carp	40.9	1.0	6.8	70.1	0.11	0.04	0.00	0.0	0.0	1.10	0.9	0.20	0.02	0.00	-	0.04	0.03	0.00	0.01	0.04	0.02	0.01	0.02	-
77	White bass	31.5	0.4	4.4	71.3	0.07	0.20	0.00	0.0	0.0	0.00	0.1	0.30	0.00	0.00	-	0.02	0.02	0.01	0.00	0.03	0.00	0.02	0.01	-
79	Common carp	43.9	1.0	3.0	77.6	0.29	0.03	0.00	-	0.0	1.50	1.5	0.30	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.01	0.00
79	Common carp	41.7	0.8	2.3	78.9	0.10	0.02	0.00	-	0.0	0.10	0.1	0.10	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
79	White bass	24.9	0.2	1.1	78.4	0.00	0.01	0.01	-	0.0	0.10	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00

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Station 79, Canadian River at Eufaula, Okla.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	River carpsucker	33.0	0.5	5.7	68.6	0.41	0.06	0.02	0.0	0.0	0.00	0.2	0.30	0.00	0.00	-	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.02	-
77	River carpsucker	31.0	0.3	3.9	68.6	0.31	0.05	0.00	0.0	0.0	0.00	0.1	0.20	0.00	0.00	-	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.02	-
77	White bass	35.3	0.6	5.0	69.5	0.99	0.10	0.03	0.0	0.0	0.00	0.4	1.00	0.00	0.00	-	0.00	0.01	0.00	0.00	0.04	0.00	0.02	0.03	-
79	Common carp	43.2	1.0	1.9	77.8	0.00	0.01	0.00	-	0.0	0.10	0.1	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Common carp	40.6	0.8	4.6	75.2	0.16	0.32	0.00	-	0.0	0.10	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
79	Largemouth bass	26.4	0.3	3.2	76.1	0.11	0.00	0.01	-	0.0	0.10	0.0	0.20	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00

Station 80, Yazoo River at Redwood, Miss.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Bigmouth buffalo	38.1	0.9	5.9	69.2	2.39	1.52	0.96	0.0	0.0	0.10	0.2	0.20	0.05	0.00	-	0.00	0.04	0.06	0.00	0.04	0.02	0.00	0.04	-
77	Bigmouth buffalo	39.4	1.0	4.4	67.2	1.40	0.90	0.60	0.0	0.0	0.20	0.3	6.30	0.03	0.01	-	0.19	0.06	0.05	0.02	0.05	0.05	0.00	0.04	-
77	Q/A re-analysis	-	-	4.1	-	0.38	0.00	0.05	-	-	0.24	-	16.00	0.00	0.00	-	0.00	0.04	0.03	0.01	0.00	0.07	0.00	0.00	-
77	Black crappie	23.6	0.4	3.1	71.2	3.77	1.77	1.00	0.0	0.0	0.10	0.2	12.70	0.01	0.00	-	0.00	0.05	0.04	0.00	0.04	0.02	0.00	0.04	-
79	Common carp	41.4	0.8	7.4	71.6	3.67	1.01	0.75	-	0.0	0.50	0.1	0.90	0.02	0.01	0.03	0.00	0.06	0.04	0.10	0.07	0.11	0.02	0.16	0.05
79	Common carp	42.4	1.1	11.5	67.1	6.76	3.01	0.65	-	0.0	0.10	0.2	10.70	0.00	0.00	0.02	0.00	0.00	0.02	0.05	0.24	0.04	0.00	0.10	0.00

Station 81, Red River at Alexandria, La.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Smallmouth buffalo	43.4	1.3	7.2	63.1	0.34	0.10	0.07	0.0	0.0	0.10	0.0	0.00	0.04	0.00	-	0.00	0.01	0.01	0.00	0.03	0.01	0.00	0.02	-
77	Q/A re-analysis	-	-	8.0	-	0.31	0.16	0.10	-	-	0.10	-	0.00	0.00	0.00	-	0.00	0.03	0.02	0.01	0.05	0.05	0.00	0.00	-
77	Smallmouth buffalo	43.9	1.4	8.5	66.5	0.32	0.12	0.10	0.0	0.0	0.20	0.0	1.00	0.05	0.00	-	0.00	0.02	0.03	0.01	0.05	0.03	0.00	0.02	-
77	Smallmouth buffalo	43.2	1.3	9.6	65.7	0.20	0.08	0.02	0.0	0.0	0.00	0.2	1.00	0.09	0.00	-	0.01	0.01	0.01	0.01	0.02	0.02	0.10	0.02	-
79	Smallmouth buffalo	42.9	1.3	9.2	72.0	1.02	0.00	0.33	-	0.0	0.10	0.2	4.70	0.00	0.00	0.00	0.00	0.03	0.01	0.03	0.00	0.02	0.00	0.04	0.01
79	Q/A re-analysis	-	-	10.0	-	1.40	0.90	0.45	-	0.2	0.03	0.1	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-
79	Smallmouth buffalo	42.4	1.3	11.3	70.0	0.44	0.15	0.00	-	0.0	0.10	0.2	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.02	0.01	0.03	0.00
79	Q/A re-analysis	-	-	11.3	-	0.86	0.13	0.07	-	0.2	0.03	0.1	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-
79	White bass	34.5	0.6	5.6	72.4	0.35	0.11	0.10	-	0.0	0.30	0.2	0.70	0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.04	0.01	0.01	0.03	0.00

Station 82, Red River at Lake Texoma, Okla.--Tex

		Mean	Mean		Mois-	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	TL (cm)	Wt (kg)	Lipid (pct)	ture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Gizzard shad	26.4	0.2	2.4	69.4	0.15	0.02	0.01	0.0	0.0	0.00	0.0	0.20	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.0	-
77	Gizzard shad	25.1	0.1	3.3	69.5	0.15	0.02	0.00	0.0	0.0	0.00	0.0	0.20	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.0	-
77	Largemouth bass	26.4	0.3	1.3	71.4	0.13	0.01	0.00	0.0	0.0	0.00	0.0	0.10	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Black crappie	27.4	0.3	2.9	75.3	0.14	0.02	0.00	-	0.0	0.00	0.0	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
79	River carpsucker	18.3	0.1	2.6	79.8	0.07	0.01	0.00	-	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	River carpsucker	18.0	0.1	1.8	80.7	0.06	0.01	0.00	-	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00

Station 83, Missouri River at Hermann, Mo.

		Mean	Mean		Mois-	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	TL (cm)	Wt (kg)	Lipid (pct)	ture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Freshwater drum	41.4	1.0	8.6	67.2	0.06	0.02	0.01	0.0	0.0	0.20	0.0	0.00	0.00	0.00	-	0.00	0.09	0.00	0.02	0.02	0.02	0.00	0.03	-
77	River carpsucker	42.2	1.0	10.3	69.3	0.31	0.27	0.07	-	0.8	0.40	0.5	2.10	0.00	0.00	0.01	0.00	0.31	0.00	0.13	0.26	0.15	0.19	0.14	0.03
79	River carpsucker	41.7	1.0	10.3	67.4	0.26	0.20	0.08	-	1.6	0.00	0.6	2.20	0.00	0.00	0.01	0.00	0.36	0.00	0.12	0.24	0.14	0.13	0.16	0.02
79	Smallmouth buffalo	49.0	1.9	8.3	72.8	0.33	0.15	0.08	-	0.0	0.10	0.0	1.50	0.00	0.00	0.00	0.00	0.24	0.00	0.08	0.19	0.12	0.15	0.16	0.04

Station 84, Bighorn River at Hardin, Mont.

		Mean	Mean		Mois-	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	TL (cm)	Wt (kg)	Lipid (pct)	ture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Goldeye	31.5	0.2	5.1	67.4	0.05	0.01	0.00	0.0	[illegible]	0.00	0.1	0.02	0.01	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	White sucker	36.1	0.5	6.3	65.9	0.01	0.00	0.00	0.0	[illegible]	0.00	0.0	0.00	0.10	0.00	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Q/A re-analysis	-	-	9.5	-	0.01	0.00	0.00	-	-	0.00	-	0.00	0.00	0.00	-	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	-
77	White sucker	31.7	0.4	3.4	78.8	0.00	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Common carp	48.3	1.8	8.1	72.4	0.07	0.01	0.00	-	0.0	0.10	0.0	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
79	Goldeye	30.5	0.5	10.1	69.4	0.04	0.00	0.01	-	0.0	0.10	0.0	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	White sucker	30.5	0.5	7.4	73.0	0.02	0.00	0.00	-	0.0	0.10	0.0	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	Q/A re-analysis	-	-	6.9	-	0.01	0.00	0.00	-	0.1	0.05	0.0	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-

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Station 85, Yellowstone River at Sidney, Mont.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's -(Aroclor Mixtures)- 1242	1248	1254	1260	-Miscellaneous Pesticides- Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	37.6	0.7	9.2	64.4	0.06	0.03	0.00	0.0	0.0	0.00	0.0	0.30	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-
77	Common carp	52.6	1.7	7.4	66.6	0.07	0.01	0.00	0.0	0.0	0.00	0.1	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Sauger	32.3	0.2	3.3	70.1	0.02	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Common carp	38.4	0.7	5.7	73.6	0.05	0.01	0.00	-	0.0	0.10	0.1	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	Common carp	46.0	1.4	3.8	75.1	0.02	0.00	0.00	-	0.0	0.00	0.0	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
79	Sauger	26.4	0.1	1.9	77.4	0.02	0.01	0.00	-	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 86, James River at Olivet, S. Dak.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's -(Aroclor Mixtures)- 1242	1248	1254	1260	-Miscellaneous Pesticides- Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	40.9	0.9	4.4	69.3	0.03	0.01	0.00	0.0	0.0	0.00	0.2	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Common carp	41.1	0.9	5.3	63.5	0.07	0.02	0.00	0.0	0.0	0.00	0.1	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Goldeye	35.8	0.4	2.8	69.3	0.15	0.02	0.00	0.0	0.0	0.40	0.6	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Carpsucker	35.8	0.5	2.4	74.4	0.03	0.00	0.00	-	0.0	0.10	0.1	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Carpsucker	37.1	0.5	2.8	75.5	0.06	0.02	0.01	-	0.0	0.20	0.1	0.20	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00
79	Goldeye	36.6	0.5	16.7	62.9	0.12	0.02	0.00	-	0.0	0.80	0.6	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 87, North Platte River at Lake McConaughy, Nebr.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's -(Aroclor Mixtures)- 1242	1248	1254	1260	-Miscellaneous Pesticides- Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	48.5	1.4	2.3	72.6	0.38	0.04	0.00	0.0	0.0	0.00	0.1	0.00	0.00	0.00	-	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	-
77	Common carp	51.1	1.7	9.3	78.1	0.54	0.11	0.00	0.0	0.0	0.00	0.2	0.30	0.01	0.00	-	0.00	0.02	0.00	0.00	0.02	0.01	0.00	0.01	-
77	Walleye	43.7	0.7	7.4	65.4	0.19	0.03	0.00	0.0	0.0	0.00	0.0	0.10	0.01	0.00	-	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00	-
79	Common carp	40.1	0.9	4.2	76.4	0.39	0.03	0.00	-	0.0	0.20	0.1	0.30	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Common carp	41.4	0.9	4.1	76.9	0.41	0.05	0.00	-	0.0	0.10	0.1	0.30	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00
79	Walleye	39.9	0.7	1[illegible].9	67.8	0.28	0.07	0.01	-	0.0	0.10	0.1	0.50	0.01	0.00	0.01	0.00	0.06	0.01	0.01	0.02	0.01	0.00	0.01	0.00

Station 68, South Platte River at Brule, Nebr.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's -(Aroclor Mixtures)- 1242	1248	1254	1260	-Miscellaneous Pesticides- Toxaphene	a-BHC	g-BHC	Dacthal	HCB	-Cyclodiene Insecticides- Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	25.7	0.2	5.5	71.0	0.01	0.01	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Common carp	24.4	0.2	4.0	76.3	0.01	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
77	Green sunfish	13.7	0.0	3.1	78.2	0.01	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
79	Black crappie	23.6	0.2	5.9	73.1	0.15	0.05	0.02	-	0.0	0.30	0.1	0.40	0.01	0.00	0.00	0.00	0.04	0.00	0.01	0.03	0.01	0.01	0.02	0.00
79	Common carp	47.8	1.0	2.4	79.5	0.23	0.05	0.00	-	0.0	0.30	0.4	0.50	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.02	0.00
79	Common carp	51.3	1.4	2.9	80.5	0.12	0.05	0.00	-	0.0	0.20	0.2	0.40	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.00

Station 69, Platte River at Louisville, Nebr.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's -(Aroclor Mixtures)- 1242	1248	1254	1260	-Miscellaneous Pesticides- Toxaphene	a-BHC	g-BHC	Dacthal	HCB	-Cyclodiene Insecticides- Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Goldeye	32.5	0.3	11.0	70.1	0.17	0.04	0.04	0.0	0.0	0.60	0.4	0.60	0.01	0.00	-	0.00	0.04	0.00	0.01	0.03	0.00	0.02	0.02	-
77	River carpsucker	34.0	0.5	3.9	65.4	0.14	0.06	0.05	0.0	0.0	0.20	0.3	0.40	0.01	0.00	-	0.00	0.07	0.00	0.02	0.06	0.05	0.02	0.05	-
77	River carpsucker	37.1	0.6	7.0	66.1	0.22	0.11	0.09	0.0	4.3	1.00	0.6	0.40	0.02	0.01	-	0.00	0.08	0.00	0.02	0.12	0.08	0.04	0.10	-
79	Carpsucker	32.5	0.5	8.1	69.4	0.10	0.05	0.06	-	0.0	0.50	0.6	0.70	0.01	0.00	0.00	0.00	0.10	0.00	0.04	0.10	0.09	0.05	0.08	0.01
79	Carpsucker	36.3	0.6	10.5	67.3	0.11	0.09	0.05	-	0.0	0.30	0.4	0.70	0.00	0.00	0.00	0.00	0.22	0.00	0.08	0.24	0.14	0.06	0.11	0.02
79	Goldeye	35.1	0.4	13.2	66.6	0.10	0.04	0.02	-	0.0	0.30	0.3	0.50	0.01	0.00	0.00	0.00	0.11	0.00	0.02	0.04	0.02	0.02	0.04	0.02

Station 90, Kansas River at Bonner Springs, Kans.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's -(Aroclor Mixtures)- 1242	1248	1254	1260	-Miscellaneous Pesticides- Toxaphene	a-BHC	g-BHC	Dacthal	HCB	-Cyclodiene Insecticides- Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	48.5	1.5	7.4	68.7	0.13	0.06	0.00	0.0	0.0	0.30	0.4	0.50	0.02	0.00	-	0.00	0.10	0.01	0.03	0.10	0.07	0.04	0.07	-
77	Q/A re-analysis	-	-	9.3	-	0.10	0.06	0.00	-	-	0.04	-	0.00	0.00	0.00	-	0.00	0.14	0.00	0.02	0.09	0.09	0.00	0.00	-
77	Common carp	49.0	1.6	7.4	68.7	0.12	0.06	0.00	0.0	0.2	0.40	0.2	0.50	0.03	0.00	-	0.01	0.10	0.01	0.03	0.11	0.07	0.03	3.06	-
77	Freshwater drum	23.6	0.1	2.7	71.6	0.05	0.02	0.00	0.0	0.0	0.20	0.1	0.30	0.01	0.00	-	0.00	5.01	0.03	0.02	0.05	0.02	0.02	0.04	-
77	Q/A re-analysis	-	-	2.7	-	0.07	0.04	0.00	-	-	0.55	-	0.00	0.00	0.00	-	0.00	2.64	0.02	0.01	0.04	0.05	0.00	0.00	-
79	Common carp	55.6	2.4	6.2	74.0	0.13	0.05	0.00	-	0.0	0.70	0.3	0.30	0.00	0.00	0.01	0.00	0.07	0.00	0.03	0.17	0.08	0.07	0.13	0.02
79	Q/A re-analysis	-	-	5.5	-	0.14	0.05	0.00	-	0.3	0.19	0.2	-	-	-	-	-	0.05	-	-	0.00	0.00	-	-	-
79	River carpsucker	38.3	0.6	7.7	71.9	0.09	0.00	0.00	-	0.0	1.60	0.3	0.00	0.00	0.00	0.01	0.00	0.12	0.01	0.12	0.71	0.20	0.13	0.30	0.04

BEST [illegible]

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Station 91, Colorado River at Lake Havasu, Ariz.--Calif.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	40.4	0.9	5.5	-	0.19	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	-
76	Channel catfish	40.3	1.0	9.0	-	0.26	0.05	0.02	0.0	0.0	0.00	0.1	0.00	0.00	0.00	-	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.00	-
78	Common carp	42.4	1.0	2.5	69.8	0.10	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Common carp	47.5	1.3	1.9	-	0.07	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Largemouth bass	27.9	0.3	3.5	72.4	0.08	0.01	0.01	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00

Station 92, Colorado River at Lake Mead, Ariz.--Nev.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
79	Channel catfish	30.2	0.2	8.6	70.5	0.14	0.05	0.01	-	0.0	0.20	0.1	0.30	0.04	0.00	0.01	0.00	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.00
79	Channel catfish	27.4	0.1	12.0	70.5	0.17	0.06	0.02	-	0.0	0.10	0.1	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.01	0.04	0.01	0.00	0.01	0.00
79	Striped bass	42.7	0.7	2.6	70.0	0.08	0.02	0.02	-	0.0	0.10	0.0	0.20	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00

Station 93, Colorado River at Lake Powell, Ariz.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Cyclodiene Insecticides Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	34.3	0.5	7.9	-	0.04	0.01	0.01	0.0	0.0	0.10	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	-
76	Common carp	34.3	0.5	4.3	-	0.03	0.00	0.00	0.0	0.0	0.20	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-
76	Largemouth bass	35.1	0.7	6.2	-	0.01	0.00	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	-
78	Common carp	36.6	0.6	2.4	-	0.01	0.00	0.00	0.0	0.1	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
78	Common carp	36.1	0.5	3.2	70.6	0.02	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Largemouth bass	33.5	0.5	4.7	70.3	0.01	0.00	0.00	0.0	0.0	0.06	0.0	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 94, Gila River at San Carlos Reservoir, Ariz.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
78	Common carp	23.9	0.2	4.3	74.0	0.09	0.03	0.00	0.0	0.0	0.00	0.0	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
78	Common carp	24.1	0.2	6.6	75.5	0.13	0.04	0.00	0.0	0.0	0.00	0.0	0.40	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
78	Largemouth bass	28.2	0.4	5.1	78.0	0.13	0.04	0.00	0.0	0.0	0.07	0.1	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00

Station 96, Snake River at Ice Harbor Dam, Wash.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Largescale sucker	37.3	0.5	6.3	-	0.29	0.09	0.06	0.0	0.0	0.20	0.0	0.30	0.01	0.00	-	0.01	0.02	0.00	0.01	0.02	0.01	0.00	0.00	-
76	Largescale sucker	37.6	0.5	3.0	-	0.24	0.07	0.00	0.0	0.0	0.00	0.0	0.30	0.01	0.00	-	0.01	0.02	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Channel catfish	33.0	0.2	9.3	-	0.29	0.09	0.02	0.0	0.0	0.40	0.2	0.00	0.01	0.01	-	0.01	0.08	0.00	0.00	0.04	0.02	0.00	0.00	-
76	Q/A re-analysis	-	-	12.0	-	0.59	0.11	0.00	-	-	0.69	-	0.00	0.00	0.00	-	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	-
78	Largescale sucker	35.6	0.4	4.0	72.0	0.05	0.06	0.03	0.0	0.0	0.00	0.0	0.10	0.00	0.00	0.06	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
78	Largescale sucker	35.6	0.4	5.4	69.9	0.12	0.07	0.04	0.0	0.1	0.10	0.0	0.20	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.00

Station 97, Columbia River at Pasco, Wash.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
78	Northern squawfish	28.7	0.2	6.5	69.9	0.38	0.10	0.00	0.0	0.0	0.18	0.1	0.40	0.00	0.00	1.22	0.00	0.02	0.01	0.00	0.02	0.00	0.00	0.02	0.00
76	Common carp	29.0	0.3	1.9	-	0.13	0.04	0.02	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.03	0.02	0.01	0.00	0.00	-
76	Common carp	29.5	0.3	2.3	-	0.14	0.04	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	-
78	Yellow perch	19.3	0.1	5.0	70.0	0.39	0.09	0.04	0.0	0.0	0.33	0.1	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Chiselmouth	26.2	0.2	11.6	68.6	0.22	0.11	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
78	Chiselmouth	28.4	0.2	16.5	70.1	0.58	0.18	0.00	0.0	0.0	0.17	0.2	0.00	0.01	0.00	0.00	0.00	0.04	0.01	0.00	0.04	0.00	0.00	0.01	0.00

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Station 98, Columbia River at Grand Coulee, Wash.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Mois-ture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxa-phene	a-BHC	g-BHC	Dac-thal	HCB	Cyclodiene Insecticides Diel-drin	En-drin	Hepta-chlor	cis Chlor-dane	trans Chlor-dane	cis Nona-chlor	trans Nona-chlor	Oxy-chlor-dane
76	Largescale sucker	41.7	0.7	4.1	-	0.03	0.00	0.00	0.0	0.0	0.10	0.2	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
76	Largescale sucker	43.9	0.8	10.9	-	0.02	0.00	0.00	0.0	0.0	0.60	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
76	Yellow perch	20.1	0.1	6.6	-	0.04	0.01	0.01	0.0	0.0	0.10	0.1	0.00	0.01	0.00	-	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01	-
78	Largescale sucker	43.7	0.8	6.2	74.7	0.04	0.01	0.03	0.0	0.1	0.10	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Largescale sucker	44.4	0.9	4.2	74.1	0.04	0.01	0.02	0.0	0.1	0.00	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Yellow perch	23.6	0.2	5.1	71.3	0.02	0.01	0.01	0.0	0.0	0.15	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 99, Waikele Stream at Waipahu, Hawaii

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Mois-ture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxa-phene	a-BHC	g-BHC	Dac-thal	HCB	Cyclodiene Insecticides Diel-drin	En-drin	Hepta-chlor	cis Chlor-dane	trans Chlor-dane	cis Nona-chlor	trans Nona-chlor	Oxy-chlor-dane
77	Cuban limia	4.8	0.0	3.8	74.0	0.27	0.00	0.10	0.0	0.0	0.20	0.2	0.00	0.01	0.00	-	0.01	0.03	0.00	0.06	0.12	0.07	0.06	0.17	-
77	Cuban limia	5.8	0.0	3.8	77.7	0.38	0.07	0.10	0.0	0.5	0.10	0.4	0.00	0.01	0.00	-	0.00	0.02	0.00	0.35	0.12	0.06	0.06	0.16	-
79	Cuban limia	5.6	0.1	5.6	73.5	0.22	0.15	0.21	-	0.0	0.20	0.6	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.06	0.16	0.04	[illegible]	0.21	0.09
79	Cuban limia	4.3	0.1	5.6	72.4	0.61	0.13	0.24	-	0.0	0.30	0.6	0.90	0.00	0.02	0.00	0.00	0.04	0.00	0.09	0.10	0.04	[illegible]	0.08	0.08
79	Mozambique tilapia	3.8	0.0	3.6	-	0.21	0.06	0.06	-	0.0	0.10	0.3	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.05	0.07	0.02	0.03	0.09	0.02

Station 100, Manoa Stream at Honolulu, Hawaii

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Mois-ture (pct)	p,p'-DDT Homologs DDE	DDD	DDT	PCB's (Aroclor Mixtures) 1242	1248	1254	1260	Miscellaneous Pesticides Toxa-phene	a-BHC	g-BHC	Dac-thal	HCB	Cyclodiene Insecticides Diel-drin	En-drin	Hepta-chlor	cis Chlor-dane	trans Chlor-dane	cis Nona-chlor	trans Nona-chlor	Oxy-chlor-dane
77	Cuban limia	7.1	0.0	9.2	71.7	0.11	0.00	0.00	0.0	0.0	0.40	0.4	0.00	0.01	0.00	-	0.01	1.90	0.03	0.70	0.93	0.30	0.46	0.90	-
77	Q/A re-analysis	-	-	12.0	-	0.11	0.30	0.14	-	-	1.10	-	0.00	0.00	0.00	-	0.00	2.00	0.00	1.20	1.10	0.66	0.00	0.00	-
77	Cuban limia	7.1	0.0	9.4	71.8	0.07	0.00	0.00	0.0	0.0	0.40	0.4	0.00	0.00	0.00	-	0.01	1.00	0.06	0.72	0.93	0.20	0.49	0.95	-
77	Mozambique tilapia	16.8	0.1	[illegible]	74.4	0.01	0.00	0.02	0.0	0.0	0.20	0.0	0.00	0.01	0.00	-	0.00	0.65	0.00	0.31	0.32	0.07	0.16	0.20	-
77	Q/A re-analysis	-	-	12.0	-	0.06	0.25	0.00	-	-	0.09	-	0.00	0.00	0.00	-	0.00	0.04	0.00	0.46	0.59	0.27	0.00	0.00	-
77	Chinese catfish	17.5	0.1	4.7	-	0.16	0.00	0.00	0.0	0.0	0.30	0.2	0.00	0.01	0.00	-	0.00	0.02	0.00	0.26	0.03	0.27	0.35	0.72	-
79	Cuban limia	5.1	0.1	9.2	68.8	0.08	0.03	0.31	-	0.0	0.40	0.3	0.00	0.00	0.00	0.00	0.01	0.00	0.01	1.17	2.53	0.54	0.71	1.04	0.74
79	Cuban limia	6.9	0.1	9.3	69.8	0.17	0.03	0.10	-	1.2	0.00	0.5	0.00	0.00	0.00	0.00	0.00	3.72	0.00	0.02	2.20	0.40	0.67	2.17	0.50
79	Mozambique tilapia	7.6	0.0	6.0	69.7	0.05	0.01	0.12	-	0.0	0.20	0.2	0.00	0.30	0.00	0.00	0.01	2.25	0.01	0.42	1.12	0.12	0.37	0.62	0.13

Station 101, Androscoggin River at Lewiston, Maine

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	White sucker	31.0	0.3	4.4	-	0.03	0.02	0.01	0.0	0.0	0.50	0.3	0.00	0.01	0.00	-	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	-
76	White sucker	31.5	0.3	5.0	-	0.08	0.04	0.02	0.0	0.2	0.60	0.6	0.00	0.03	0.00	-	0.01	0.01	0.00	0.30	0.01	0.01	0.01	0.01	-
76	Yellow perch	23.6	0.2	5.4	-	0.04	0.03	0.01	0.0	0.0	0.70	0.5	0.00	0.02	0.00	-	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.00	-
78	White sucker	27.4	0.2	3.3	75.6	0.04	0.03	0.01	0.0	0.1	0.30	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01
78	White sucker	26.2	0.2	3.8	74.5	0.04	0.02	0.00	0.0	0.2	0.26	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01
78	Yellow perch	20.6	0.1	3.1	71.6	0.03	0.00	0.00	0.0	0.0	0.37	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station 102, Lake Superior at Keweenaw Point, Mich.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Bloater	26.4	0.3	15.1	61.1	0.53	0.05	0.15	0.0	0.0	0.30	0.6	2.00	0.03	0.00	-	0.01	0.06	0.01	0.00	0.03	0.00	0.02	0.04	-
77	Bloater	26.2	0.3	13.3	62.1	0.80	0.05	0.19	0.0	0.0	0.60	0.8	2.90	0.02	0.00	-	0.01	0.04	0.00	0.00	0.02	0.00	0.02	0.05	-
77	Lake trout	55.9	2.0	16.2	71.6	0.32	0.06	0.08	0.0	0.0	0.30	0.4	3.00	0.02	0.00	-	0.01	0.05	0.01	0.00	0.03	0.01	0.02	0.04	-
79	Bloater	27.7	0.2	19.3	66.4	0.67	0.07	0.22	-	0.0	1.50	0.7	3.60	0.02	0.00	0.01	0.00	0.05	0.01	0.01	0.01	0.01	0.08	0.14	0.06
79	Bloater	29.5	0.3	14.7	69.1	0.16	0.08	0.09	-	0.0	0.30	0.1	2.00	0.01	0.00	0.02	0.00	0.05	0.01	0.02	0.00	0.00	0.06	0.09	0.04
79	Lake trout	60.5	2.4	31.1	56.4	0.90	0.08	0.08	-	0.0	0.60	0.9	7.30	0.03	0.00	0.02	0.00	0.09	0.02	0.04	0.12	0.08	0.19	0.18	0.07

Station 103, Lake Superior at Whitefish Point, Mich.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Lake trout	60.7	2.3	22.4	65.1	0.22	0.06	0.03	0.0	0.0	0.20	0.4	3.10	0.03	0.00	-	0.01	0.06	0.04	0.00	0.04	0.01	0.00	0.05	-
77	Lake whitefish	48.8	1.4	14.4	66.3	0.06	0.04	0.00	0.0	0.0	0.00	0.1	1.40	0.03	0.00	-	0.01	0.05	0.02	0.01	0.02	0.01	0.00	0.03	-
77	Lake whitefish	50.3	1.3	13.5	66.9	0.11	0.07	0.06	0.0	0.0	0.40	0.0	2.10	0.02	0.00	-	0.01	0.06	0.01	0.01	0.02	0.00	0.00	0.03	-
79	Lake trout	56.1	1.9	21.3	62.3	0.13	0.05	0.05	-	0.0	0.30	0.2	1.90	0.01	0.00	0.01	0.00	0.05	0.01	0.01	0.03	0.01	0.03	0.05	0.01
79	Lake whitefish	56.6	1.6	9.7	71.0	0.07	0.03	0.00	-	0.0	0.10	0.1	1.20	0.02	0.00	0.00	0.00	0.04	0.01	0.02	0.02	0.01	0.02	0.03	0.01
79	Lake whitefish	49.5	1.2	7.9	72.3	0.05	0.02	0.02	-	0.0	0.20	0.1	0.70	0.01	0.00	0.00	0.00	0.03	0.01	0.01	0.01	0.00	0.02	0.02	0.01

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Station 10[illegible], Lake Michigan at Beaver Island, Mich.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Bloater	28.7	0.3	22.5	43.5	2.93	0.34	1.99	0.0	0.8	3.00	3.0	6.40	0.03	0.00	-	0.02	0.45	0.07	0.10	0.08	0.09	0.00	0.11	-
77	Lake trout	65.3	2.7	23.5	46.0	2.94	0.34	0.50	0.0	0.0	0.60	1.0	8.10	0.02	0.00	-	0.00	0.33	0.04	0.00	0.25	0.14	0.06	0.22	-
79	Bloater	30.7	0.3	28.9	59.0	0.85	0.16	0.14	-	0.0	1.40	0.6	3.30	0.03	0.00	0.04	0.01	0.49	0.05	0.12	0.17	0.05	0.06	0.13	0.07
79	Bloater	28.2	0.0	28.2	59.7	0.79	0.16	0.13	-	0.0	1.30	0.5	3.10	0.04	0.00	0.02	0.01	0.42	0.03	0.11	0.14	0.05	0.05	0.10	0.04
79	Lake trout	61.0	2.0	18.6	64.4	1.07	0.24	0.19	-	0.0	2.60	1.7	5.50	0.02	0.00	0.01	0.01	0.36	0.03	0.09	0.28	0.08	0.23	0.27	0.06

Station 105, Lake Michigan at Saugatuck, Mich.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Bloater	29.0	0.3	23.9	67.7	0.59	0.10	0.08	0.0	0.9	1.20	1.2	3.70	0.04	0.00	-	0.03	0.50	0.09	0.11	0.20	0.13	0.08	0.11	-
77	Bloater	28.7	0.3	7.1	57.5	0.50	0.18	0.12	0.0	0.8	1.20	1.1	0.59	0.04	0.00	-	0.00	0.72	0.06	0.14	0.18	0.11	0.10	0.10	-
77	Lake trout	62.7	2.1	19.0	66.2	3.47	0.38	0.40	0.0	1.6	2.40	3.3	7.00	0.02	0.00	-	0.02	0.29	0.05	0.00	0.22	0.07	0.13	0.27	-
79	Bloater	28.7	0.2	23.1	61.6	0.69	0.25	0.21	-	0.0	1.90	1.1	3.40	0.03	0.00	0.03	0.01	0.51	0.05	0.16	0.27	0.15	0.09	0.17	0.07
79	Bloater	29.7	0.3	27.4	57.9	1.12	0.54	0.27	-	0.0	2.60	2.2	3.40	0.02	0.00	0.06	0.01	0.72	0.11	0.22	0.35	0.18	0.17	0.16	0.06
79	Lake trout	66.3	2.7	18.6	63.9	2.62	0.55	0.00	-	0.0	3.20	3.9	6.80	0.01	0.00	0.03	0.00	0.50	0.03	0.11	0.34	0.11	0.46	0.42	0.10

Station 106, Lake Huron at Alpena, Mich.

						p,p'-DDT Homologs			PCB's -(Aroclor Mixtures)-				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Lake trout	59.4	2.0	25.9	61.9	1.87	0.43	0.31	0.0	1.0	1.30	2.3	9.00	0.03	0.00	-	0.03	0.00	0.00	0.04	0.18	0.05	0.08	0.20	-
77	White sucker	48.3	1.3	8.4	68.9	0.22	0.05	0.09	0.0	0.0	0.40	0.7	0.50	0.01	0.00	-	0.01	0.04	0.01	0.01	0.02	0.00	0.00	0.02	-
77	White sucker	41.4	0.9	6.6	71.8	0.13	0.04	0.02	0.0	0.0	0.20	0.4	0.50	0.01	0.00	-	0.00	0.03	0.00	0.00	0.01	0.00	0.00	0.01	-
77	White sucker	32.3	0.4	4.6	76.7	0.05	0.03	0.00	0.0	0.0	0.00	0.7	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-
79	White sucker	32.5	0.5	5.5	76.5	0.06	0.00	0.00	-	0.0	0.30	0.1	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.00
79	White sucker	34.5	0.6	5.4	76.8	0.22	0.00	0.07	-	0.0	0.50	0.8	0.30	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.02	0.00
79	Yellow perch	23.6	0.2	6.2	73.0	0.21	0.09	0.07	-	0.0	0.80	0.7	1.50	0.01	0.00	0.00	0.00	0.35	0.00	0.01	0.05	0.01	0.01	0.05	0.01

Station 107, Lake St. Clair at Mount Clemens, Mich.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	51.8	2.0	11.5	65.4	0.71	0.22	0.00	0.0	0.0	1.50	4.0	0.00	0.02	0.00	-	0.09	0.02	0.00	0.00	0.08	0.04	0.02	0.06	-
77	Common carp	51.1	2.0	9.4	67.4	0.88	0.30	0.00	0.0	0.0	1.00	3.2	0.00	0.02	0.00	-	0.05	0.02	0.00	0.00	0.05	0.05	0.03	0.05	-
77	Walleye	51.6	1.2	4.4	69.7	1.52	0.21	0.47	0.0	1.4	1.80	2.5	4.20	0.01	0.00	-	0.02	0.05	0.01	0.00	0.13	0.00	0.03	0.12	-
79	Common carp	50.3	1.8	7.5	73.4	0.65	0.31	0.01	-	0.0	3.60	2.2	0.00	0.01	0.00	0.01	0.01	0.02	0.00	0.03	0.11	0.04	0.03	0.06	0.01
79	Common carp	47.0	1.6	8.1	73.2	0.30	0.27	0.01	-	0.0	1.90	1.2	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.03	0.12	0.05	0.04	0.06	0.00
79	Walleye	41.9	0.4	9.5	71.8	0.30	0.12	0.04	-	0.0	2.70	3.3	0.80	0.01	0.00	0.01	0.05	0.06	0.01	0.02	0.08	0.03	0.02	0.06	0.01

Station 108, Lake Erie at Port Clinton, Ohio

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Common carp	40.4	1.1	10.7	64.1	0.12	0.12	0.14	0.0	0.4	1.20	0.8	0.00	0.01	0.00	-	0.01	0.03	0.00	0.00	0.01	0.01	0.01	0.01	-
77	Common carp	42.4	1.1	9.9	70.3	0.10	0.14	0.00	0.0	0.4	1.50	1.2	0.00	0.01	0.00	-	0.01	0.03	0.00	0.00	0.01	0.01	0.01	0.01	-
77	Walleye	40.4	0.7	8.6	67.0	0.12	0.17	0.00	0.0	0.0	0.60	0.9	0.00	0.01	0.00	-	0.00	0.05	0.00	0.00	0.01	0.01	0.00	0.01	-
79	Common carp	44.7	1.4	10.7	68.7	0.18	0.12	0.00	-	0.0	1.10	1.5	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.02	0.07	0.02	0.02	0.04	0.00
79	Common carp	38.4	0.7	10.1	71.0	0.08	0.09	0.00	-	0.0	0.60	0.7	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.01	0.04	0.01	0.01	0.02	0.00
79	Walleye	37.8	0.6	10.4	68.4	0.20	0.16	0.02	-	0.0	1.30	1.3	0.50	0.02	0.00	0.00	0.01	0.04	0.00	0.02	0.08	0.02	0.04	0.05	0.00

Station 109, Lake Ontario at Roosevelt Beach, N.Y.

						p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
79	Brown trout	44.2	1.2	12.2	69.6	0.40	0.17	0.11	-	2.3	1.60	1.2	1.40	0.02	0.00	0.02	0.03	0.12	0.00	0.02	0.07	0.00	0.05	0.09	0.02
79	Rock bass	19.6	0.2	6.6	72.2	0.00	0.00	0.00	-	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
79	Rock bass	19.8	0.2	5.1	73.2	0.31	0.07	0.13	-	0.0	1.60	1.5	0.60	0.01	0.00	0.00	0.01	0.04	0.00	0.02	0.03	0.03	0.02	0.05	0.00

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Station 111, Mississippi River at Lake City, Minn.--Pepin, Wis.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Walleye	53.6	1.7	11.3	-	0.30	0.12	0.05	0.0	0.0	7.20	1.2	0.00	0.00	0.00	-	0.00	0.03	0.00	0.00	0.10	0.02	0.00	0.00	-
76	Q/A re-analysis	-	-	15.0	-	0.09	0.10	0.00	-	-	6.20	-	0.00	0.00	0.00	-	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	-
76	White sucker	45.2	1.2	4.5	-	0.04	0.02	0.01	0.0	0.0	1.80	0.4	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-
78	Sauger	37.6	0.5	5.8	-	0.20	0.10	0.00	0.0	0.9	4.40	1.1	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.01	0.06	0.02	0.02	0.03	0.00
78	White sucker	47.5	1.1	3.0	75.1	0.11	0.05	0.01	0.0	0.3	2.77	0.6	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.01	0.00
78	White sucker	44.7	1.1	7.1	70.4	0.13	0.06	0.19	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00

Station 112, Mississippi River at Dubuque, Iowa

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	47.0	1.4	7.7	-	0.08	0.03	0.01	0.0	0.0	1.10	0.3	0.00	0.01	0.01	-	0.00	0.03	0.00	0.00	0.02	0.01	0.00	0.00	-
76	Common carp	45.5	1.3	8.8	-	0.06	0.02	0.01	0.0	0.0	0.70	0.2	0.00	0.01	0.01	-	0.00	0.01	0.00	0.00	0.02	0.01	0.00	0.00	-
76	Largemouth bass	24.4	0.2	5.3	-	0.02	0.01	0.00	0.0	0.0	0.40	0.1	0.00	0.01	0.00	-	0.00	0.03	0.00	0.00	0.02	0.01	0.00	0.00	-
78	Common carp	32.8	0.5	7.4	68.2	0.02	0.01	0.00	0.0	0.0	0.20	0.0	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.01	0.00	0.01	0.00
78	Common carp	36.6	0.7	9.2	67.5	0.02	0.01	0.00	0.0	0.0	0.33	0.0	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.00	0.00	0.00	0.00
78	Largemouth bass	28.4	0.5	3.7	71.7	0.06	0.02	0.00	0.0	0.0	0.52	0.3	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.02	0.00

Station 113, San Antonio River at McFadden, Tex.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
77	Alligator gar	58.2	1.0	14.2	50.3	0.27	0.09	0.04	0.0	0.0	0.00	0.3	0.70	0.01	0.00	-	0.00	0.02	0.01	0.01	0.03	0.01	0.01	0.02	-
77	Channel catfish	48.8	2.2	5.5	71.8	0.21	0.09	0.00	0.0	0.0	0.00	0.6	0.30	0.00	0.00	-	0.00	0.01	0.00	0.01	0.05	0.03	0.02	0.03	-
77	Smallmouth buffalo	46.5	3.0	7.1	67.0	0.10	0.04	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	-	0.00	0.02	0.01	0.00	0.02	0.02	0.00	0.02	-
79	Longnose gar	72.4	1.0	4.5	69.1	0.81	0.12	0.00	-	0.0	1.00	0.6	0.30	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.06	0.02	0.03	0.05	0.00

Station 114, Bear River at Brigham City, Utah

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	29.2	0.5	1.7	-	0.02	0.02	0.01	0.0	0.0	0.10	0.0	0.00	0.01	0.00	-	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	-
76	Common carp	37.3	0.8	9.2	-	0.02	0.02	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	-
76	Channel catfish	33.8	0.4	7.8	-	0.10	0.05	0.00	0.0	0.0	0.20	0.0	0.00	0.01	0.01	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	-
78	Common carp	29.7	0.4	1.4	77.6	0.02	0.01	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
73	Common carp	25.9	0.3	2.1	76.9	0.02	0.02	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
78	Channel catfish	45.5	1.0	5.2	73.3	0.10	0.22	0.00	0.0	0.1	0.00	0.1	0.00	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.01	0.00

Station 115, Colorado River at Yuma, Ariz.--Winterhaven, Calif.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Common carp	29.7	0.4	2.6	-	0.03	0.06	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
76	Largemouth bass	30.5	0.5	4.6	-	0.79	0.15	0.33	0.0	0.0	0.20	0.0	1.00	0.01	0.00	-	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	-
76	Striped mullet	34.3	0.5	12.5	-	1.30	0.44	1.16	0.0	0.0	0.00	0.0	1.90	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	-
76	Q/A re-analysis	-	-	12.0	-	1.00	0.36	0.83	-	-	0.21	-	0.00	0.00	0.00	-	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-
78	Common carp	40.6	1.2	5.5	73.0	0.43	0.09	0.05	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Largemouth bass	30.2	0.4	4.3	-	0.83	0.12	0.24	0.0	0.0	0.00	0.0	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
78	Striped mullet	51.6	1.5	21.0	61.9	1.35	0.50	1.06	0.0	0.1	0.10	0.0	2.40	0.01	0.00	0.02	0.00	0.03	0.03	0.01	0.03	0.01	0.00	0.03	0.00
78	Q/A re-analysis	-	-	20.4	-	1.61	0.49	0.96	-	0.0	0.08	0.0	-	-	-	-	-	0.00	-	-	0.00	0.00	-	-	-
78	Q/A re-analysis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Station 116, Souris River at Upham, N. Dak.

Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	p,p'-DDT Homologs			PCB's (Aroclor Mixtures)				Miscellaneous Pesticides					Cyclodiene Insecticides							
						DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Northern pike	49.5	0.8	1.1	-	0.02	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	-
78	Northern pike	55.1	1.1	2.0	75.2	0.01	0.00	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	White sucker	42.9	1.1	7.0	73.0	0.04	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	White sucker	41.9	1.0	4.5	73.4	0.01	0.01	0.00	0.0	0.0	0.00	0.0	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00

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Station 117, Flathead River at Creston, Mont.

						-----p,p'-DDT Homologs-----			-------PCB's-------- -(Aroclor Mixtures)-				-Miscellaneous Pesticides-					-------------Cyclodiene Insecticides-------------							
Year	Species	Mean TL (cm)	Mean Wt (kg)	Lipid (pct)	Moisture (pct)	DDE	DDD	DDT	1242	1248	1254	1260	Toxaphene	a-BHC	g-BHC	Dacthal	HCB	Dieldrin	Endrin	Heptachlor	cis Chlordane	trans Chlordane	cis Nonachlor	trans Nonachlor	Oxychlordane
76	Longnose sucker	38.6	0.5	5.2	-	0.03	0.01	0.01	0.0	0.0	0.00	0.0	0.00	0.01	0.00	-	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	-
76	Longnose sucker	32.5	0.5	3.9	-	0.04	0.01	0.01	0.0	0.0	0.20	0.0	0.16	0.01	0.00	-	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	-
76	Northern squawfish	34.5	0.3	3.5	-	0.25	0.01	0.00	0.0	0.0	0.50	0.2	0.00	0.01	0.00	-	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	-
78	Longnose sucker	36.3	0.5	4.0	-	0.01	0.00	0.00	0.0	0.0	0.10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	Northern squawfish	48.5	1.2	4.9	73.5	0.17	0.02	0.00	0.0	0.1	0.44	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.00

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A list of current *Resource Publications* follows.

133. A Handbook for Terrestrial Habitat Evaluation in Central Missouri, edited and compiled by Thomas S. Baskett, Deretha A. Darrow, Diana L. Hallett, Michael J. Armbruster, Jonathan A. Ellis, Bettina Flood Sparrowe, and Paul A. Korte. 1980. 155 pp.
134. Conservation of the Amphibia of the United States: A Review, by R. Bruce Bury, C. Kenneth Dodd, Jr., and Gary M. Fellers. 1980. 34 pp.
135. Annotated Bibliography for Aquatic Resource Management of the Upper Colorado River Ecosystem, by Richard S. Wydoski, Kim Gilbert, Karl Seethaler, Charles W. McAda, and Joy A. Wydoski. 1980. 186 pp.
136. Blackbirds and Corn in Ohio, by Richard A. Dolbeer. 1980. 18 pp.
137. Handbook of Acute Toxicity of Chemicals to Fish and Aquatic Invertebrates, by Waynon W. Johnson and Mack T. Finley. 1980. 98 pp.
138. Waterfowl and their Wintering Grounds in Mexico, 1937–64, by George B. Saunders and Dorothy Chapman Saunders. 1981. 151 pp.
139. Native Names of Mexican Birds, researched and compiled by Lillian R. Birkenstein and Roy E. Tomlinson. 1981. 159 pp.
140. Procedures for the Use of Aircraft in Wildlife Biotelemetry Studies, by David S. Gilmer, Lewis M. Cowardin, Renee L. Duval, Larry M. Mechlin, Charles W. Shaiffer, and V. B. Kuechle. 1981. 19 pp.
141. Use of Wetland Habitats by Birds in the National Petroleum Reserve – Alaska, by Dirk V. Derksen, Thomas C. Rothe, and William D. Eldridge. 1981. 27 pp.
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147. Population Ecology of the Mallard. VII. Distribution and Derivation of the Harvest, by Robert E. Munro and Charles F. Kimball. 1982. 126 pp.
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149. Mitigation and Enhancement Techniques for the Upper Mississippi River System and Other Large River Systems, by Rosalie A. Schnick, John M. Morton, Jeffrey C. Mochalski, and Jonathan T. Beall. 1982. 714 pp.
150. Microscopic Anatomy of Salmonids: An Atlas, by William T. Yasutake and Joseph H. Wales. 1983.
151. Avian Use of Forest Habitats in the Pembina Hills of Northeastern North Dakota, by Craig A. Faanes and Jonathan M. Andrew. 1983. 24 pp.

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